

Cornerstones of Good Diabetes Care

A Look at the Role of Pharmacy, Podiatry, Optometry, and Dentistry in the Lives of People With Diabetes

Diabetes not only affects daily health, but also puts those with the disease at greater risk for numerous secondary complications, including negative drug interactions, lower-extremity amputations, loss of vision, and teeth and gum problems. For these reasons, the healthcare

areas of pharmacy, podiatry, optometry and dentistry – and those who work in them – are especially important in the lives of people with diabetes. They could mean the difference between a life free of complications and a life of unnecessary suffering.

The following four articles deal with these four healthcare areas and are intended to provide general education and to help those with diabetes avoid additional problems related to their disease.

Pharmacists: Unexploited Members of the Healthcare Team

by Rick Bowers

Your Prescription For Good Health – Talk With Your Pharmacist. Those words were the theme of National Pharmacy Week from October 21-27.


Yet, not many people follow that advice. In fact, many consider pharmacists nothing more than men and women in lab coats who count out pills and funnel them from big bottles into smaller ones. But pharmacists today are certainly more than that.

“The pharmacist is no longer simply a dispenser of drugs, and the pharmacy itself has become a healthcare center,” said Thomas E. Menighan, a pharmacist and president of the American Pharmaceutical Association (APhA). “Pharmacists are actively changing their practices to meet the challenges of the healthcare system and their patient needs and demands.”

Consumers should look to their pharmacist for medication counseling, including drug regimen reviews and drug interaction checks; coordination of patient care with physicians and other healthcare providers; and monitoring of side effects. Some pharmacists can also perform limited patient testing, such as cholesterol screening, glucose monitoring and blood pressure checks, for serious health-threatening problems. And few people are aware that 31 states even allow pharmacists to give shots to immunize patients against injury and illness.

Pharmacists are clearly unexploited members of the healthcare team, and taking more advantage of them could help patients both medically and financially.

Though medicines can improve the quality of life for millions of Americans,



they can also do serious harm if not taken correctly. Americans consume more than 50 billion tablets each year. When taken as directed, they're safe and effective. But they're still serious medicine. Even though taking one's medication properly is one of the best ways to avoid future healthcare costs, a survey shows that nearly half of consumers do not always read product labels, fewer than 40 percent are consulting pharmacists, and one-third are not aware of the risks sometimes associated with these medicines. As a result, each year, thousands of people end up in the hospital, fail to get better, and spend more money than they have to simply because they do not take their medication properly.

This is where highly trained pharmacists come in. Pharmacists typically have completed either a five-year Bachelor of Science in Pharmacy or a six-year Doctor of Pharmacy, and some even specialize in Nuclear Pharmacy, Pharmacotherapy, Psychiatric Pharmacy, Oncology Pharmacy, or Nutrition Support Pharmacy. This extensive training, which is focused on drugs and how they work, makes the pharmacist the most knowledgeable healthcare professional when it comes to medicines and their use. They are, in fact,

medication experts.

In what may seem like a simple act of filling a prescription, pharmacists check patients' records to make sure that one prescription doesn't duplicate another or interact badly. They may also ask questions to monitor whether side effects are occurring and to prevent giving medications to which patients may be allergic. Pharmacists know about interactions with food, medicines, or dietary supplements that can affect how medicines work and can sometimes be dangerous. When picking up a new medicine, patients should ask if it will work safely with other prescription and nonprescription medicines and any herbal products they may be taking. Pharmacists often have access to drug interaction databases that can alert them to any dangers. Ginseng, for example, can lower blood sugar too much when mixed with certain diabetes medicines. The prescription blood thinner Coumadin taken with ginkgo biloba, an over-the-counter herbal remedy, can cause dangerous internal bleeding. Some foods can even cause the body to absorb certain medicines more quickly than expected and lead to an overdose. Even eating something as seemingly innocuous as onions can be a hazard if one is taking blood-thinning medication. Some combinations can even be fatal.

Because of the importance of the pharmacist as perhaps the last line of defense against medication errors and accidents, choosing a pharmacist should be a serious matter. When choosing a pharmacist, many people simply look for a pharmacy that is convenient, either close to home or work. But location is only one of the things to consider. Your pharmacist should be someone

you know and trust, and you should give as much consideration to choosing him or her as you do to choosing a doctor. How accessible is the pharmacist? Is he or she easy to talk to and willing to hear your concerns? During what hours is the pharmacist available to answer your questions?

It is important to choose one pharmacist with whom you can establish an ongoing relationship. By choosing one pharmacy, a complete record of the medicines you take is in one place, making them easier to coordinate and manage. This way there will be less risk of duplicating medicine or having one prescription interact harmfully with another. This is especially important if

you take a number of different medications.

Building a relationship with a pharmacist can also save you time and money. For example, you might ask your pharmacist if there is a generic version of the medication you take. These are products the Food and Drug Administration (FDA) has judged equivalent to the brand-name product, but they are usually less expensive than their brand-name counterparts. Your pharmacist can answer any questions concerning your use of these medications.

In some cases, a pharmacist might be able to help you with special circumstances, such as when you are taking care of an elderly relative. If you have aging parents who live

nearby, you might ask, for example, if it is possible to deliver prescriptions to their home and send the bill to you.

Pharmacists can also be allies in overcoming problems with insurance coverage. While consumers also need to inquire of their employer and/or insurer about how their prescription coverage is designed, pharmacists can help identify those medications that are and are not covered. If you are having financial problems, your pharmacist may be able to refer you to a county or city agency or a manufacturer that assists residents with healthcare costs. Some local organizations will help members of the community on a short-term basis to get them through a rough spot.

Unfortunately, because of the increased volume of prescriptions, the increasing hassles of insurance coverage, and an apparent shortage of licensed pharmacists, overburdened pharmacists may sometimes be distracted from looking for or noticing all potentially problematic drug combinations for one customer as they rush to move on to the next customer. Indeed, studies have demonstrated that pharmacists sometimes give hazardous drug combinations to patients without warning. The possibility of such errors is greatly increased when patients purchase the conflicting products at different times or at different pharmacies. Taking a proactive stance as a patient by asking your pharmacist about interactions might cause him or her to take more time checking your specific medications.

Although pharmacists are indeed busy and under stress, they should never be too busy to answer patients' questions and try to alleviate their concerns. In fact, some pharmacists have even begun to take their patients' feelings into concern and have begun to set aside special rooms where they can consult with patients privately.

As patients begin to become aware of the many services that highly trained pharmacists can provide, and as pharmacists begin to consider patients' needs, a new type of relationship may be fostered between pharmacists and patients – a relationship that should be good for all involved.

Although managing one's healthcare is ultimately the responsibility of the patient, a knowledgeable, caring pharmacist can play a vital role in ensuring a positive outcome. Talking with your pharmacist may indeed be your prescription for better health. ■

Even With Diabetes, Your Feet Can Last a Lifetime

by Ross E. Taubman, DPM

Diabetes mellitus affects approximately 16 million Americans, or 5 percent of the population. Unfortunately, one-third of those with the disease remain undiagnosed and are not even aware they have it. Fully 15 percent of people with diabetes will develop an open sore on their feet at some time in their life. The consequences of these sores can be devastating. Diabetes is the leading cause of nontraumatic lower-extremity amputations in the United States. Recent statistics reveal that there are over 86,000 lower-extremity amputations performed each year on people with diabetes. Foot disease in people with diabetes costs the nation more than \$1 billion each year.

The causes of foot problems in people with diabetes are related to two factors. First and foremost, diabetes can cause nerve damage, called diabetic neuropathy, in the feet and legs. This leads to loss of feeling and loss of protective sensation, leaving people with diabetic neuropathy unable to feel injury to their feet. Even seemingly minor injuries, a pebble in their shoe or a scrape to their toes, are imperceptible to them. When an injury occurs, there is no pain response to get them to look at their feet and evaluate the problem; therefore, minor injuries can progress to major injury, infection, tissue loss, and amputation.

Secondly, diabetes can also affect the circulation in the feet and legs. Most commonly, people with diabetes develop calcifications within the arteries of the feet and legs. This usually starts in the small blood vessels of the toes and can progress higher into the legs. If an injury or open sore occurs, these people do not have adequate circulation to heal

these wounds. With the combination of neuropathy, poor circulation, and an injury, it is easy to imagine why there are so many amputations in people with diabetes.

However, if you have diabetes, there is



every reason to be optimistic.

It is estimated that two-thirds of these amputations can be prevented with appropriate foot care. Just because you have poor circulation or neuropathy, it does not mean that you are destined to have an amputation. It usually requires an “event” (some injury or sore on the foot) that leads to an infection that doesn’t heal. Consequently, there are very concrete self-management practices and professional evaluation and treatment protocols that can markedly reduce your risk of amputation.

The primary treatment in preventing foot disease in those with diabetes is keeping your blood sugar (glucose), blood pressure, and cholesterol under good control. It is a combination of these three factors that is directly responsible for the development of poor circulation and

neuropathy. Good control of these factors can only be accomplished by consistent exercise, an appropriate diet, and taking prescribed medications properly. The effects of elevated blood sugar, high blood pressure, and cholesterol are cumulative. The longer these remain elevated, the greater the chance of developing neuropathy and poor circulation. Additionally, once you develop neuropathy or poor circulation, this is usually not reversible. So if you already have diabetes with neuropathy or poor circulation, self-management behaviors and professional care become increasingly more important.

All people with diabetes should develop daily self-management practices, even if they have no evidence of neuropathy or poor circulation. These practices begin with visually inspecting their feet daily. Particular attention should be paid to the area between the toes and to the bottoms of the feet. You are looking for open cuts, sores, redness, swelling, bruising, or anything else that wasn’t there the day before. If there is evidence of these items, you should immediately contact your healthcare provider. Early detection and treatment are the keys to preventing amputations. The feet should be washed and dried thoroughly each day. Make sure that the area between the toes is completely dry. Make sure that you have properly fitting shoes and socks. The socks should be nonconstricting, as they can affect circulation. Shoes should have good arch support and a broad toe box area for maximum room. Shoes with laces are the most appropriate for substantial walking or standing. People with diabetes should never walk barefooted. Shoes are the single most important protection your feet can have and they can save limbs! Nails

should be trimmed straight across. If you have thick or curved nails, you need to seek professional care from a podiatrist to treat these problems. Additionally, if you have corns or calluses, do not use over-the-counter corn or callus removers. These can cause chemical burns that can directly lead to infection. Seek professional podiatric care for these problems as well. Finally, if you smoke, quit. Smoking markedly decreases circulation to the feet increasing the risk of amputation significantly.

All people with diabetes should receive at least an annual comprehensive foot examination. This examination must include evaluation of your circulation, a comprehensive neurological examination, evaluation of the skin and nails for evidence of disease or problems, and an evaluation of your foot structure (looking for bunions, hammertoes, arch structure) and shoes. All of these components should be looked at comprehensively. Your primary care provider can perform this if he or she is adept at this type of comprehensive examination. If not, you will be referred to a podiatrist to have this examination performed. If there is a problem with any of the elements of the comprehensive foot examination, your podiatrist may determine that you require periodic “preventative foot care.” This may include trimming of nails, trimming of corns and calluses, and shoe inserts or custom-made shoes to remove pressure areas and prevent them from developing open sores. Lastly, take every opportunity for regular professional inspection of your feet. When you see your primary care provider for your blood sugar, blood pressure, and cholesterol checks, take your shoes and socks off! This will remind your primary care provider to take a look at your feet. Remember, early detection and treatment are the keys to amputation prevention.

If you develop an open sore on your feet, immediate attention is required. The vast majority of wounds can be successfully treated and healed with appropriate medical attention. Most wounds require debridement (removal of devitalized or dead tissue) and off-weighting (removing pressure on the wound). Additionally, if the wound is infected, treatment may require oral or intravenous antibiotics. Only providers well-versed in treating diabetic wounds should perform this.

Recent advancements in medical technology make it possible to treat and heal complex diabetic wounds that previously were untreatable. Regranex® (Becaplermin) Gel 0.01% is a topically applied diabetic wound healing agent. It is a genetically engineered platelet-derived factor, which can actively stimulate the body to form new tissue to heal these wounds. It works by stimulating migration of cells to the wound site, encouraging the body to form new tissue to heal the wound. Other advances in medical technology are in the area of skin substitutes. Products include Apligraf® and Dermagraft®. Both of these products are skin substitutes that are placed over diabetic wounds to act as a lattice or scaffolding for the migration of cells to heal the wound. These dressings require surgical placement to the wound by a foot-care specialist. Additionally, wound debridement and off-weighting are essential to the successful use of any of these newer wound healing technologies. Finally, because most wounds will heal with conventional debridement and

off-weighting, these products are medically indicated only after a period of conventional wound treatment has been attempted.

People with diabetes are at a two-and-a-half to four times greater risk of amputation than the general population. However, fully two-thirds of all amputations in people with diabetes are preventable. Paying appropriate attention to control of blood sugar, blood pressure, and cholesterol is the first step in amputation prevention. Next, practicing self-management behaviors is the key to prevention and early detection of foot wounds. Lastly, annual comprehensive professional foot examinations and regular treatment are essential to preventing amputations. By adhering to these principles, people with diabetes can lead healthy, productive, and fulfilling lives and can have “feet that last a lifetime”! ■



About the Author

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Jeepers, Creepers, Take Good Care Of Your Peepers



by Christina DiMartino

Approximately 15.7 million people, or 5.9 percent of the United States population, have diabetes. While an estimated 10.3 million have been diagnosed, approximately 5.4 million people do not know they have the disease. Many become aware only when they develop one of diabetes' life-threatening complications.

Diabetes is the seventh leading cause of death (sixth leading cause of death by disease) in the United States. Death certificate data indicates that diabetes contributed to 193,140 deaths in 1996. It is a chronic disease that has no cure, and in many cases it causes blindness.

The leading cause of diabetes-related blindness is retinopathy. Between 12,000 and 24,000 new cases are reported in people

ages 20-74 every year. The term "retinopathy" is used for abnormalities of the small blood vessels of the retina caused by the disease, and it is a common complication associated with both type 1 and type 2 diabetes.

Mark Overbay, communications spokesperson for the American Diabetes Association (ADA), headquartered in Alexandria, Virginia, says two types of retinopathy are common. "Nonproliferative retinopathy is a usually mild form that generally does not interfere with vision," he says. "Abnormalities are limited to the retina and will usually interfere with vision only if it involves the macula, the area on the retina that gives us the sharpest vision. If left untreated it can progress to proliferative retinopathy, the more serious form. It occurs when new blood vessels branch out or proliferate in and around the retina. It can cause bleeding into the fluid-filled center of the eye, or swelling of the retina, and ultimately lead to blindness."

The key to preventing diabetes-related eye problems is good control of blood glucose levels, a healthy diet and good eye care, all of which should be monitored constantly by a team of healthcare professionals. According to the National Eye Institute in Bethesda, Maryland, there are often no symptoms in the early stages of diabetes-related eye disease, and vision may not change until the disease becomes severe. Nor is there any pain. Blurred vision may occur when the macula — the part of the retina that provides sharp, central vision — swells from the leaking fluid. This condition is called "macular edema." If new

vessels have grown on the surface of the retina, they can bleed into the eye and block vision. Even in more advanced cases, however, the disease may progress a long way without symptoms. Because nearly half of all people with diabetes will develop some degree of diabetic retinopathy during their lifetime, the Institute emphasizes the importance of people with diabetes getting regular medical checkups with an eye care professional. "Medical experts are capable of detecting retinopathy early, and possibly prevent blindness," Overbay says.

The American Diabetes Association offers the following advice:

- People with type 1 diabetes should see their eye care professional annually for a dilated eye examination, beginning five years after the onset of diabetes.
- Women with type 1 who are pregnant should have a comprehensive eye examination in the first trimester and close follow-up throughout pregnancy.
- Patients with type 2 diabetes should see their eye care professional for a dilated eye examination shortly after diagnosis of diabetes and annually thereafter.
- Because diabetes is a multi-system chronic disease, it is important that all healthcare professionals who make up the "team" be kept informed of any health and treatment changes as soon as they occur, even when they are separate from their particular specialty.

Good News And Bad News

Diabetic retinopathy is treatable. Your eye care professional may suggest laser surgery in which a strong light beam is aimed onto the retina to shrink the abnormal vessels. This surgery has been proved to reduce the risk of severe vision loss from this type of diabetic retinopathy by 90 percent. If you have macular edema, laser surgery may also be used. In this case, the laser beam is used

to seal or destroy the leaking blood vessels. Another procedure, called a vitrectomy, cleans blood from the eye. Unfortunately, laser surgery often cannot restore vision that has already been lost. That is why detecting diabetic retinopathy early is the best way to prevent vision loss.

Retinopathy is not totally treatable, but your risk can be greatly reduced. The Diabetes Control and Complications Trial (DCCT) showed that better control of blood sugar levels slows the onset and progression of retinopathy and lessens the need for laser surgery for severe retinopathy.

If you have diabetes, you are also at risk for other diabetic eye diseases. Studies show that you are twice as likely to get a cataract as a person who does not have the disease. Also, cataracts develop at an earlier age in people with diabetes. Cataracts can usually be treated by surgery.

Glaucoma may also become a problem. A person with diabetes is nearly twice as likely to get glaucoma as other adults. And, as with diabetic retinopathy, the longer you have had diabetes, the greater your risk of getting glaucoma. Glaucoma may be treated with medications, laser, or other forms of surgery.

Do It Today

In ideal circumstances, patients with diabetes will have their disease under good control and be monitored frequently by a healthcare team knowledgeable in the care of diabetes. If you have diabetes, be sure to have your eyes checked regularly by a medical professional, and be sure to tell him or her that you have diabetes. ■

The American Diabetes Association

www.diabetes.org
1-800-DIABETES

National Eye Institute

www.nei.nih.gov
1-301/496-5248

The Facts

- Nearly all patients who have type 1 diabetes for about 20 years will have evidence of diabetic retinopathy.
- As many as 21 percent of people with type 2 diabetes have retinopathy when they are first diagnosed with diabetes, and most will eventually develop some degree of retinopathy.
- In the United States, diabetes is responsible for 8 percent of legal blindness, making it the leading cause of new cases of blindness in adults 20-74 years of age. Each year, from 12,000 to 24,000 people lose their sight because of diabetes.
- Glaucoma, cataract and corneal disease are more common in people with diabetes and contribute to the high rate of blindness.

Can Aspirin Save Your Sight?

Researchers who study retinopathy say the condition appears to be caused in part by hundreds of microscopic blood clots that form in the eye.

In 2001, Dr. Mara Lorenzi and colleagues at the Schepens Eye Research Institute at Harvard University prepared a report that was published in *Diabetes*. "Aspirin is already commonly recommended by doctors for patients at risk of cardiovascular disease because it can help prevent the clots that can lead to strokes and heart attacks," the report said. "The American Diabetes Association counsels diabetics to take it for that reason."

The group's research shows evidence that blood clots may explain loss of vision in people with diabetes. They found four times as many blood clots in the eyes of people with diabetes as in people without the disease. As the number of clots increases, the clots block blood flow to the retina, setting into motion a series of changes in the eye that lead to blindness. This means that aspirin may play a new role in retinopathy. For aspirin therapy to be effective, however, it must begin in the early stages of the disease.

Diabetes and Oral Health

by JoAnn R. Gurenlian, RDH, PhD, and George W. Taylor, DMD, DrPh

Diabetes mellitus is a serious disease that requires the attention of both patients and healthcare providers. It is important to monitor health on a regular basis, including measuring blood sugar, blood pressure and cholesterol. Sometimes, caring for the mouth gets overlooked in the process of trying to control all of these other problems. Yet, diabetes can affect the oral cavity, and proper care of the mouth can actually help patients achieve better glycemic control.

Diabetes-related problems that can occur in the mouth include burning sensations known as burning mouth syndrome, overgrowth of gum (gingival) tissue, abnormal wound healing, dental decay, gingivitis, periodontal disease and fungal infections. Some individuals with diabetes notice a fruity (acetone) breath on occasion. Others may notice frequent dry mouth or a change in the thickness of their saliva. These findings are associated with a number of changes that occur related to diabetes, such as excessive loss of fluids due to frequent urination, the altered ability to respond to infections, changes in very small blood vessels, and increased glucose concentrations in the saliva.

Of particular concern to dentists



and dental hygienists are the effects of diabetes on the health of the gums and periodontal tissues.

People with diabetes are more susceptible to more severe gum disease (also called periodontal disease).

Periodontal disease is an infection of the tissues that hold the teeth in place. In its early stages, gum disease can cause the gums to become reddened and swollen and to sometimes bleed during tooth brushing. This disease, called gingivitis, can usually be reversed with regular cleaning (prophylaxis) by a dental health professional and diligent daily tooth brushing and flossing.

If untreated, gum disease may lead to the gums pulling away from the teeth and destruction of the fibers and bone

that hold the teeth in the jaws.

This disease process, which is called periodontitis, can in the most severe cases lead to the loss of some or all of the teeth. Periodontal disease can be aggravated by poor glycemic control. The increased levels of glucose in the blood and saliva may lead to a more severe infection of the gums by impairing the body's ability to respond to periodontal

disease-causing bacteria and their toxic products and by weakening the body's ability to heal.

Common signs of periodontal disease are gums that bleed easily; red, swollen or tender gums; gums that have pulled away from the teeth; pus between the gums when the gums are pressed; persistent bad breath or bad taste in the mouth; permanent teeth that are loose or separating; any change in the way the teeth fit together when the patient bites; or any change in the fit of partial dentures. However, most people do not experience pain with periodontal disease, and some people can have periodontal disease and not have any of these symptoms.

Caring for Your Mouth

If you have diabetes, it is important to perform daily mouth care as recommended

by your dentist or dental hygienist. A daily regimen of brushing teeth to remove plaque after eating and flossing at least once each day is advised. Keeping dental plaque at a minimal level will help reduce the likelihood of dental decay and periodontal disease. Your dentist or dental hygienist can demonstrate how to brush and floss properly and recommend products that will assist you in controlling dental plaque.

Everybody likes to snack between meals. If you prefer to snack, choose foods that are low in sugar and fat to avoid the risk of dental decay and to maintain glycemic control.

Ask your dentist or dental hygienist to teach you how to perform a mouth self-examination. Then examine your mouth on a monthly basis. Contact your oral health professional if you notice signs of infection, such as sore, swollen or bleeding gums or mouth ulcers.

It is recommended that individuals with diabetes not smoke or use chewing tobacco products. If you do use smoking products, we encourage you to reduce your intake and quit. Giving up nicotine products is difficult, but your dentist and dental hygienist can help you by offering a smoking cessation program.

Another thing that you can do to care for your mouth is schedule regular visits with your dentist and dental hygienist. These oral health professionals can monitor and treat changes that may be occurring in your mouth due to diabetes. You may be asked to schedule appointments as frequently as every three months depending upon the extent of changes that have occurred in your mouth and your level of glycemic control.

Things to Know When Visiting Your Oral Health Professional

When visiting the dentist and dental hygienist, it is important to update them on your diabetes health status. Make sure that they know your current symptoms as well as the medications you are taking, the dosages and how often you take them. If you use insulin, inform them of the type, how often it is taken and when peak insulin activity occurs. It is also helpful for the dentist and dental hygienist to know when you had your last meal and the type of carbohydrates consumed.

In terms of your diabetes control status, tell your oral health professionals how often you have glucose testing and what your latest A1c and self-monitored blood glucose levels were. Also, inform them of the frequency of hypoglycemic episodes.

Depending on the type of oral health treatment needed, you may be scheduled for a morning appointment. Or, depending on the type of insulin or oral diabetes medications you are taking, the dental health professional may schedule your appointment before or after the time of your diabetes medicine's peak activity to help avoid hypoglycemia. If you require a longer appointment for a particular dental procedure, bring a snack and your medications. The dentist or dental hygienist can plan a short break to make sure that you are comfortable and not experiencing hypoglycemia.

Finally, tell your dentist or dental hygienist of any changes you have noticed in your mouth since the last appointment. Identify-

ing oral health problems early will help ensure that appropriate treatment is provided and that your glycemic control can be maintained.

Conclusion

Individuals with diabetes need to pay attention to their oral health. Dental professionals can help you develop a program that will enable you to maintain a healthy mouth, which will assist you in achieving glycemic control. Talk to your dentist and dental hygienist today. ■

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