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for all hazards, and effectively manage federal response and recovery efforts following any national incident. FEMA also initiates proactive mitigation activities, trains “first responders,” and manages the National Flood Insurance Program and the U.S. Fire Administration. It works in partnership with other organizations that are part of the nation’s emergency management system.

### **Red Cross**

The Red Cross is a disaster relief organization that works at the site of an event to help provide relief services and support to the local community and response structure. It has a tradition of working with blind and visually impaired individuals, and has published booklets on a variety of safety topics specifically for that population.

### **CONCLUSION**

Ultimately, people who are blind or visually impaired have a number of resources in terms of learning more about emergency preparedness. The Federal, state, and local governments have established offices to coordinate planning for and responses to disasters. Each of these offices has taken steps to engage the community of individuals with disabilities, and leadership from the community of people with vision loss has been involved in the dialogue.

Professionals working with this population, family members, and disabled individuals themselves all have a great responsibility with respect to emergency preparedness. Although this type of information can be helpful in the aftermath of a disaster, it is much more valuable if obtained and studied in advance. Many significant losses can be avoided with the acquisition of reliable information and the existence of a plan for evacuation.

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## **Diabetes Management and Visual Impairment**

*Susan V. Ponchillia*

Diabetes is currently one of the major public health issues in North America. In the United States, 20.8 million children and adults have some form of diabetes (American Diabetes Association [ADA], 2006a) and multiple factors have led to an increasing number of people with diabetes being also affected by vision loss. The large number of babies born after World War II began to reach age 60 in 2006 (Adler, 2005), and they join a population of elders who are generally living longer due to improved treatment of chronic diseases. For the same reason, most “baby boomers” and their elders also enjoy a better quality of life. Unfortunately, a more sedentary and overfed lifestyle is associated with obesity and, in turn, with Type II diabetes. The number of new cases of this disease is growing exponentially, with 1.5 million added in 2005 (ADA, 2006b). Seven percent of the overall population of the United States and Canada now have some type of diabetes, and almost 21% of people age 60 or older have diabetes (ADA, 2006b; Centers for Disease Control, 2006). Diabetes negatively affects the quality of life of millions of people.

Diabetes education is critical in reducing the morbidity (and mortality) associated with diabetes and its complications, which include vision loss, neuropathy (both autonomic and peripheral), nephropathy (kidney disease), dental disease, and cardiovascular disease (leading to heart disease and stroke). The complications of diabetes affect the function of fine and gross motor activities; vision, hearing, and tactile senses; overall quality of life; and mobility (Rodriguez & Gabb, 2005). Diabetes is estimated to be the leading cause of blindness among adults aged 20–74, with 12,000 to 24,000 new cases of diabetes-related blindness each year (ADA, 2005; Sieving, 2002). If every state in the nation divided

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equally the lower number in the estimate of new cases of blindness, each would have 240 newly blinded citizens per year whose quality of life is compromised and who would be likely to need blindness or low vision rehabilitation services. Of course, those 240 who lose vision as the result of diabetes would be in addition to the individuals who already have visual impairment from other causes and who develop diabetes as a secondary condition.

### **TEACHING THE IMPORTANCE OF GLYCEMIC CONTROL**

Direct medical care cannot cure diabetes. Rather, the goal of care for people with diabetes is management of the disease, specifically by optimizing glycemic control and minimizing complications (ADA, 2006c; Bode, 2005; Rodriguez & Gabb, 2005; Saudek, 2005). The Diabetes Control and Complications Trial (DCCT), now termed the Epidemiology of Diabetes Interventions and Complications Study, showed the sustained positive effect of good glycemic control on reduction of complications (DCCT Research Group, 1993; DCCT/EDIC Research Group, 2003; Rodriguez & Gabb, 2005). Recently, the International Diabetes Federation issued its first global guideline for aggressive treatment of diabetes (ADA, 2005), which established care plans including diabetes education and regular self-monitoring of blood glucose levels (ADA, 2004; 2006b).

### **MEDICAL PROVIDERS AND PATIENTS WITH LOW VISION**

Sighted patients diagnosed with diabetes routinely receive diabetes education in one or more sessions as part of their care plan. Ideally, they are referred to certified diabetes educators, who address questions and topics that may include: What effect do the medications, including insulin, have on my glucose? What is my glucose level? What foods can I eat and in what quantity? How do I manage my daily activities and balance them with adequate meals?

Diabetes education typically includes receipt of a variety of glossy print materials distributed by physicians, diabetes educators, and pharmaceutical companies. There are also some informational web sites that offer graphics or video to demonstrate self-management skills like testing blood glucose and injecting insulin. However, most of the up-to-date patient education materials are in formats that are not accessible to people who cannot read standard print, and related web sites, even when partially accessible to patients who depend on auditory or enlarged computer output, are rarely completely accessible.

All too often, patients with diabetes and vision impairment remain disconnected from relevant resources because physicians and diabetes educators are unaware of adaptations or services for people with functional vision loss. As is well known to providers in the vision field, physicians and diabetes educators do not often refer patients with diabetes and vision impairment to appropriate agencies and professionals (that is, vision rehabilitation teachers or therapists). It is also the case that medical professionals are no more likely than those in the general public to be aware of the abilities and needs of people who are visually impaired. A case in point: A friend with diabetes who is blind was accompanied by his wife when he went to his physician's office; when it was time for the patient to be examined, the doctor turned to the patient's wife and said, "You can take his shirt off now."

Some patients with diabetes and vision impairment who are capable of independent diabetes self-management are routinely advised to ask someone else to measure their insulin or test blood glucose. Many are left to depend on visiting nurses to help manage their diabetes simply because they have not been informed about adaptive diabetes management devices and techniques. These patients are usually uninformed about the best practices unless they are extraordinarily aware of their needs and seek out possible sources of

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accessible diabetes management products and educational materials.

### RESOURCES AND RECOMMENDATIONS

A relatively small, but growing, number of diabetes educators are availing themselves of the opportunity for continuing education regarding the needs of patients with visual impairments. The American Association of Diabetes Educators' Disabilities/Visual Impairment Specialty Practice Group works to ensure that people with disabilities will have full access to all components of diabetes self-management education, on a par with that provided to people with no current disability (<[www.aadenet.org/AboutUs/SPGs.shtml](http://www.aadenet.org/AboutUs/SPGs.shtml)>). The group offers continuing education for all association members, and has a long history of bridging the gap between patients with visual impairments and medical or diabetes professionals. Thus, those patients who are fortunate enough to be referred to a certified diabetes educator who is aware of how to manage diabetes with visual impairment will receive appropriate services.

There are virtually no regular scholarly publications that address diabetes and visual impairment, but *The Voice of the Diabetic* has long been a valuable informational resource for consumers and professionals who seek information about products, information, and practices for managing diabetes with visual impairment. It is produced quarterly by the Diabetes Action Network of the National Federation of the Blind in print and on cassette, and is available on the web to all subscribers (see <[www.nfb.org/voice.htm](http://www.nfb.org/voice.htm)> for more information). Unfortunately, too few people who could benefit from the publication are aware of its existence.

Vision rehabilitation therapists are the professionals who are most likely to be encountered by patients with diabetes and visual impairments (or, at least, by those patients who are fortunate enough to be referred to appropriate agencies) who need assistance

with self-management techniques and materials. Rehabilitation therapists are specially trained to instruct individuals who are blind or visually impaired and who may also have other conditions. They are prepared to work as a team with certified diabetes educators to ensure high-quality diabetes self-management education. Therapists teach patients how to use tactile or low vision techniques to monitor glucose, identify and measure insulin and other medications, and manage various activities of daily living. In addition, rehabilitation therapists are the professionals who are most likely to be aware of specialized resources such as accessible diabetes education materials, talking glucose monitors, talking scales, and tactile insulin measurement devices.

Unfortunately, most people with diabetes and visual impairments have very little chance of connecting with certified diabetes educators who are aware of the abilities of those with visual impairments. Patients can consider themselves lucky if they make contact with agencies that have vision rehabilitation therapists who can provide instruction on adaptive techniques or accessible information. Further, it is unlikely that all of the diabetes education materials offered to people with diabetes are completely accessible. The reality is that patients with visual impairments do not routinely receive diabetes education services comparable to those offered to diabetes patients with 20/20 vision.

A first step toward countering the lack of awareness by professionals would be the inclusion of disability awareness and sensitivity training in the core curricula of medical professionals. Medical education should also include information about parallel professions such as vision rehabilitation therapy, orientation and mobility, and occupational therapy, as well as ways to contact and collaborate with those working in these related fields.

Further, medical device manufacturers and pharmaceutical companies should be urged to incorporate principles of universal design

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into their product research and development, so as to enable the use of their materials by the greatest number of people (Mace, 1998; Story, 1998; Story & Mueller, 2002; Stratton, 2001). One example that has been suggested is a low-cost glucose monitor that features a large display, tactile markings to locate controls, and the capability of voice output without costly peripherals (Uslan, Eghtesadi, & Burton, 2002).

Finally, it is strongly recommended that instructional materials of all kinds, including web sites, adopt a format that enables immediate and complete access by those who have visual impairments or other disabilities.

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## **Adequacy of the Mental Health System in Meeting the Needs of Adults Who Are Visually Impaired**

*Amy Horowitz and Joann P. Reinhardt*

Although depression is not an inevitable consequence of vision impairment, it is a common mental health problem among adults who are visually impaired. A recent study showed that 7% of applicants for vision rehabilitation services who were age 65 and older met the diagnostic criteria for a major depressive disorder, and another 27% had sub-threshold depression (Horowitz, Reinhardt, & Kennedy, 2005). These rates are higher than those found among the general population of community-dwelling older adults, and similar to those for older adults who are medically ill. Additional evidence indicates that the prevalence of mental health problems may be even higher in young and middle-aged adults with adventitious vision loss, with 40–45% having clinically significant depressive symptomatology, and 20% exhibiting moderate to severe anxiety symptoms (Brennan & Cardinali, 2000; Cimarolli, in press).

The consequences of depression for adults with visual impairments are far-reaching. Depression, in general, is associated with greater functional disability, morbidity, and mortality among middle-aged and older adults. Furthermore, adults with comorbid vision loss and depression are less likely to seek, be referred to, or use vision rehabilitation services; and those who do seek care tend to receive less service compared to those who are not depressed. Not surprisingly,

depression is also associated with poorer rehabilitation outcomes. Given these consequences, access to the services of the mental health system and the integration of mental health services into the vision rehabilitation system clearly represent high priorities in the organization of services for people with vision impairments. Yet, there remain extensive gaps in services and widespread unmet mental health needs among people who are visually impaired.

### **THE MENTAL HEALTH SERVICE SYSTEM**

The organization, structure, and funding of the mental health service system in the United States is intergovernmental, involving federal, state, and local units. Yet, overall, there is little disagreement that funding is meager and services inadequate to the need. The primary mechanism for funding mental health services is through the federal government's block grants to the individual states for community mental health centers. These centers are mandated to provide comprehensive, community-based mental health services to all residents within specific catchment areas. However, because block grants are based on the assumption that states have unique needs, there is no common set of mandated services; each state ultimately establishes its own approach. Unfortunately, because resources have been so limited, many community mental health centers cannot provide genuinely comprehensive services, and many have targeted available resources to populations of greatest need, such as people with persistent, severe mental illness (Cummings & Cassie, 2006).

Medicare and Medicaid also provide funding for mental health services, with Medicare primarily serving older adults, and Medicaid programs targeted to individuals in financial need. The policies of both programs, however, have consistently restricted coverage for mental health services in comparison to general medical care. Although parity of coverage of these programs—as well as that of private insurance plans (which often follow the policies