In Brief

Most elderly people with diabetes are community dwelling and cared for by local health care providers and frequently by caregivers within the elders' homes. Care for these elders is often suboptimal compared with that of elderly people without diabetes. Issues include polypharmacy, decreased cognition, deficiencies in activities of daily living, functional impairment, decreased health literacy, depression, financial problems, and increased risk of falling. Strategies to address these issues should be part of health care providers' practice. Providers can also assist the caregivers of elderly patients by including them in the medical plan, identifying support systems, providing respite, and acknowledging their value. Many community and governmental resources are available and may be helpful for elderly patients with diabetes.

Caring for Community-Dwelling Older Adults With Diabetes: Perspectives From Health Care Providers and Caregivers

Linda B. Haas, PhC, RN, CDE

Diabetes is a disease of aging,[1] and as the diabetes epidemic continues unabated and the population ages, care of older adults with diabetes will consume more resources and assume greater importance in the health care system. The majority of older people, even older people with diabetes, are community dwelling.[2] Thus, strategies to address the needs of these patients and those who care for them, both health care professionals and informal caregivers, are important. The elderly are not a homogenous group. There are "young old" and "old old;" there are vigorous and healthy elders with strong social support, frail elders with no social support, and all variations between. Frail elders are defined as having three or more of the following characteristics: muscle weakness, slow walking speed, exhaustion, low physical activity levels, and unintentional weight loss.[3]

When caring for older adults with diabetes, a major role of the health care system is to identify resources for these patients and their caregivers. For example, therapy may involve many medications (polypharmacy). Thus, pill reminder boxes can be a simple way to help people remember to take their medications. Similarly, identification of malls that open early for walkers may facilitate increasing activity levels. Goals and outcomes should be periodically reassessed and adapted because the situations of elderly patients will change.

This article addresses issues that health care providers and caregivers of older patients may face within the context of their communities. Caregivers of elders with diabetes may be family members, neighbors, or friends, may or may not live with the patient, and may or may not have a health care background. Providers, patients, and families live within communities, and these communities can both present barriers and offer helpful resources to diabetes care for elders.

Health Care Providers

Older people with diabetes may not be receiving recommended diabetes care. A study in North Carolina[4] of 11 facilities serving low-income seniors showed low adherence to diabetes guidelines, with only 77% of patients having their blood pressure measured and only 3.3% having foot exams. Patients who were older, not on insulin, and without other prevalent diseases received poorer care. The Cardiovascular Health Study[5] showed that only 12% of older patients with diabetes achieved targets recommended by the American Diabetes Association (ADA). Only 50% of those with known heart disease were treated with aspirin, and only 33% of those with diabetes without known heart disease were treated with aspirin. In addition, ~ 50% of these patients had uncontrolled hypertension (> 140/90 mmHg), and only 8% had LDL cholesterol levels < 100 mg/dl, compared with 54% of older people without diabetes with LDL cholesterol < 100 mg/dl. The Assessing Care of Vulnerable Elders study, using the validated instrument Vulnerable Elder Survey, which predicts elders at risk for functional decline and mortality in 2 years, showed that health care that required history taking, medication prescribing, and counseling was of poorer quality in community-dwelling elders than expected, based on 207 quality indicators. Thus, care for elderly patients with diabetes was of significantly poorer quality compared with that of elders without diabetes.[6]

When health care providers deal with older patients with diabetes, the patients may be newly diagnosed or have diabetes of long duration and long-term complications. The management of diabetes in the elderly is similar to that in younger adults with a few differences. Meal planning and regular physical activity are still the cornerstones of management but may present different challenges. Undernutrition may be more prevalent than overnutrition, and physical activity may need to include assistive devices or programs. Medication therapy may also present different challenges because of polypharmacy and possible visual and dexterity impairments. Self-monitoring is indicated not only for blood glucose, but also for blood pressure. Self-management training is crucial and effective and often must include patients' caregivers as well as patients themselves.[7]

Elders with diabetes will frequently have comorbidities, and health care providers need to be aware of these comorbidities and consider them when developing a diabetes management plan. For example, many older people have arthritis, and physical activity goals must consider limitations related to arthritis. A study of community-dwelling elders by Bruce et al.[8] showed that 11–18% had cognitive impairment, 53% had some deficiencies in their ability to perform activities of daily living, and > 50% had depressive symptoms. Only 36% had no deficits in any domain studied. Thus, when caring for elders with diabetes, screening for these disorders is indicated.

The American Geriatric Society (AGS) guidelines for "Improving Care of the Older Person With Diabetes"[9] recommend individualized care that considers the individual's life expectancy, cognitive status, preferences, functional status, and social support. Because of polypharmacy issue in elders, the AGS strongly recommends that an important component of care be to maintain an updated medication list. This list should be kept by patients, caregivers, and health care providers and updated periodically. Some electronic medical record systems allow providers to add over-the-counter medications. The importance of knowing over-the-counter medications and supplements was shown by Najm et al.,[10] who found that 48% of the elderly surveyed in their study used complementary and alternative medicine during the past year, and 62% of the elderly who used these did not tell their health care providers about their use of these therapies.

Another issue for health care providers caring for elders with diabetes is health literacy. One study showed that only 37% of patients with limited English had health insurance. Those without health insurance were more apt to report that they had diabetes, that their health was fair or poor, that they had more emotional difficulties, and that they made less use of preventive services.[11] To address health literacy and access issues, outreach efforts may be appropriate. This outreach should consist of culturally appropriate, low-literacy educational materials and can use culturally appropriate in-language media channels to disseminate the availability of health services.[2]

Jerant et al.[12] in the Homing in on Health Study used focus groups with a mean age of participants of 60 years to identify several barriers to care. These barriers were depression, weight problems, difficulty exercising, fatigue, poor physician communication, low family support, pain, and financial problems. Barriers to accessing self-management support resources in this study were lack of awareness of the resource, physical symptoms, transportation problems, lack of money, and lack of insurance. Vass et al.[13] showed that when health care providers were educated in how to do a short geriatric assessment, their patients, especially those ≥ 80 years of age, showed improved functional ability.

Although falls are not usually considered a complication of diabetes, for the elderly with diabetes, fall prevention must be a major focus of health care providers and is often a major concern for caregivers. Falls are a danger to all older people, but those with diabetes have additional risk factors,[9] including:

- Polyuria, nocturia, and incontinence (from hyperglycemia)
- Decreased cognition (from hyperglycemia)
- Confusion/loss of coordination or consciousness (from hypoglycemia)
- Orthostatic hypotension (from hyperglycemia and autonomic neuropathy)
- Muscle weakness (from neuropathy)
- Decreased position sense (from sensory peripheral neuropathy).

Achievement of blood glucose levels < 200 mg/dl will help prevent the increased urination and decreased cognition associated with hyperglycemia. Ongoing patient self-management education for patients on insulin or insulin secretagogues and their caregivers should include prevention, recognition, and prompt treatment of hypoglycemia. If patients have orthostatic hypotension, in addition to measures to control glucose levels, they should be instructed to hold onto a secure object when they stand up. If patients have muscle weakness from amyotrophy, range-of-motion exercises and active exercise will help strengthen muscles and prevent further loss and can be carried out with the help of caregivers. If patients have sensory peripheral neuropathy, their footwear should be sturdy and fit properly. A walker or other mobility assistive device may

help prevent falls. Muscle strengthening and balance improvement programs can significantly decrease falls in elderly people.[14]

Caregivers

Caregivers of elders with diabetes may be family members (e.g., spouse, sibling, child, or grandchild), friends, neighbors, or members of a specific support system such as a church or social organization. These caregivers are an invaluable part of elder health care and should be included in the management plan as much as possible.

Hennessey et al.,[15] using focus groups of American Indians, found that the caregivers studied had the following concerns: anxiety about home care, coping with psychosocial issues, decision making, and communication with other family members. These caregivers reported that it helped to develop a care routine.

Lackey and Gates[16] studied adults who had been caregivers as children. These subjects reported that giving personal care was the hardest aspect of caregiving, and household tasks were the most time consuming. They reported that family life, school, and time with friends were most affected. Thus, it is important that caregivers who are children get information regarding their elder's illness and have a support system identified to give these caregiving children time to be children.

Langa et al.[17] looked at the average weekly hours of informal caregiving received by subjects > 70 years of age in the Oldest Old Study. These elders without diabetes received 6.1 hours of caregiving, those with diabetes on no medications received 10.5 hours, those on oral medications received 10.1 hours, and those on insulin received 14.4 hours of care. Heart disease, stroke, and visual impairment were associated with more informal care received.[17]

Caregiving can take a toll on those providing the care. The caregiver burden is defined as the effect of stressors involved in caring for physically or mentally ill people. Caregiving has been associated with an increased risk of poor performance in older women caring for ill spouses.[18] In addition, McKinlay et al.[19] showed that the largest negative impact on caregivers was in their personal lives.

Faison et al.,[20] using the Burden Interview, showed a positive correlation between caregiving burden and more activities of care, both direct, such as bathing and feeding, and indirect, such as running errands, doing housework, and making meals. There is increased caregiving burden felt by daughters and other relatives who live with their elders. Elders in a family where there is increased caregiving burden are twice as likely to be institutionalized. Because of this caregiving burden, the caregiving environment needs to be assessed so health care providers can implement plans for early intervention before the burden becomes too great for the caregiver.

Sewitch et al.[21] have shown that if an elder is depressed, the caregiver, whether a spouse or child, provided more care, had poorer mental health, and had poorer perceived quality of life, and they recommended that psychosocial support may be indicated for the caregivers of depressed elders. Caregivers report intense feelings of loneliness, particularly if they do not have social networks. Thus, helping elders and their spouses or other caregivers maintain their current social networks and develop new ones should be addressed before patients or caregivers become too weak.[22]

Caregivers often assume much of the older patients' care and assist them in activities of daily living. In addition, caregivers often help with transportation, as well as shopping and preparing food. Because of their important role in home care, caregivers should be included in health care provider appointments if possible. However, Silliman et al.[23] found that only 35% of caregivers participated in medical encounters.

When caregivers do attend medical encounters, health care providers should address both the patient and the caregiver together and avoid communicating with only one person and ignoring the other. It is also helpful to encourage caregivers to write down concerns and bring them to the appointment and to record instructions during the appointment. Health care providers can assist caregivers by writing instructions in a clear, concise, readable manner.

Some health care systems, such as the Veterans Health Administration, provide respite for caregivers and will admit patients for short stays so caregivers can have vacations. These potential resources can be identified by local social services departments. Other ways to provide respite to caregivers is to identify community resources for elders with diabetes. Gilden et al.[7] found that support groups helped to increase family involvement in the care of elders with diabetes. Samuel-Hodge et al.[24] found that family-centered and church-based approaches were effective in improving care for older African-American women with diabetes.

Community

To address the importance of community for elders with diabetes, it can be helpful to use an ecological perspective. This perspective examines how individuals and their communities interact, the range of services in the community, the resources and types of assistance available, and supports, such as continuity of quality clinical care and strong social supports. These services include health care providers, community health resources (e.g., visiting nurses, elder care workers, social workers, and physical and occupational therapists), families, neighborhoods, shopping facilities, and recreation and safety programs. If these services are lacking or inadequate, health care providers and other members of the community can collaborate to influence policy issues. Collaborations can heighten awareness of problem areas, improve problem solving, expand the scope of programs by creating linkages such as with community health workers, and expand programs through formal partnerships, for example, with other organizations and governmental agencies.[25]

There are many community resources for elders with diabetes. These resources may be offers by the federal, state, or local government, faith-based organizations, businesses, or other community organizations.

The American Society on Aging formed a partnership with the Centers for Disease Control and Prevention (CDC) to create an excellent website and manual for older Americans and those who care for them. The name of the program is "Live Well, Live Long: Steps to Better Health. Health Promotion and Disease Prevention for Older Adults." The program is available online at www.asaging.org/cdc. There is a module related to nutrition and one for activity. The National Diabetes Education Program, under the auspices of the National Institutes of Health and the CDC, has a national program that encourages diabetes community partnerships. There are excellent programs that specifically target older adults and different ethnic groups and are culturally appropriate.

Information about these programs, including downloadable material and lists of ongoing programs and partnerships, is available online at no cost at http://ndep.nih.gov.

The chronic care model involves clinical information systems, decision support, delivery system design, and self-management support.[26] Leveille et al.[27] implemented a senior center–based chronic illness self-management and disability prevention program to evaluate the effect of this model on health functioning and health care utilization. The sample was 201 people aged ≥ 70 years who were randomized to the chronic care model or usual care. Elders in the intervention group were seen one to eight times by a geriatric nurse practitioner (median: three times). The intervention group showed increased physical activity and senior center participation, decreased psychoactive medications, and decreased decline in function ($P < 0.05$). In the intervention group, hospitalizations during the follow-up year decreased by 38% and increased by 30% in the control group ($P = 0.83$). The total number of hospital days in the intervention group was 33, whereas hospital days in the control group were 116 ($P = 0.49$).[27]

An important contribution communities make to elders' health is by facilitating the ability of elders to continue to be physically active. Strong evidence shows that community-wide campaigns, nonfamily social support, access to places for physical activity, and informational outreach activities can increase participation in community programs.[25] Several community programs have been established. One, run though the Eastside Village Health Worker Project in Detroit, Mich., is the Healthy Eating and Exercising to Reduce Diabetes program. Major interventions include running senior walking groups, offering diabetes education and cooking demonstrations, and creating access to quality produce by setting up produce stands in places such as community centers.[28]

In addition to the effects of exercise on diabetes, studies have also shown that increased activity benefits seniors in other ways, such as improving their sense of well-being, helping to prevent falls, and improving mobility.[14] Programs that improve aerobic capacity, strength, balance, and flexibility offer an ideal way for elders to avoid multiple problems.

The issue of how to get relatively sedentary older adults to increase their physical activity is complex. Many such individuals do not live in areas that are pedestrian friendly. Often, elders do not have the financial resources to join fitness clubs. A model program would include activities to increase aerobic capacity, such as walking, and arm and leg strengthening exercises. The program would start with very low resistance training, flexibility exercises, and exercises that focus on balance.[14]

The Lifetime Fitness Program is an example of a low-cost approach to increasing overall physical activity. This program was developed for community use and designed for relatively sedentary older adults. The program uses a small-group format to motivate participants and teach a program of exercises and the principles regarding how and when to move to higher levels. The group program is designed for settings such as senior centers or any community hall and does not require expensive equipment. Many seniors particularly value the group interaction and continue in the group program on a long-term basis. However, once the first 6-week session is over, people have the skills to continue the program in their homes if they prefer. This program has evolved to the Enhance Fitness program, which consists of a carefully chosen, hour-long exercise program, three times per week, in senior centers throughout the state of Washington and across the United States. Each exercise class involves a mix of activities, including endurance, strength, balance, cardio fitness, and flexibility training. Information about this program is available online at http://www.projectenhance.org/index.html.

The Arthritis Foundation also supplies videos and conducts swimming exercises for people with arthritis. (Most elders with diabetes have some arthritis.) This resource can be found in local phone books.

Community-Based Self Management Support

Lorig et al.[29] developed and tested a particularly useful program for elderly patients. The program is a short group course that increases patients' confidence and skills in comprehensively managing chronic disease. The Self-Management of Chronic Disease course improves functional status, includes adaptation of exercise, and reduces health care utilization for a variety of chronic conditions. The course uses trained lay facilitators and focuses on enhancing participants' own problem-solving skills. Attendees learn about everything needed to improve outcomes of care. The sessions occur weekly for 7 weeks, and attendees often continue in contact with each another. This continuing contact enhances their social networks. Some states have developed a cadre of expert trainers who can train lay volunteer facilitators to implement these courses in a variety of community settings.

As mentioned earlier, older patients with diabetes often have other chronic conditions, such as heart disease, arthritis, depression, and risk of falling. Project Enhance, a program of the Senior Services of Seattle and King County in Washington encourages seniors with chronic health conditions at senior centers and public housing buildings in Seattle to develop a 1-year individualized health action plan. Some of the most common action plan goals are to increase exercise, control weight, and reduce depression and anxiety. This nationally recognized project seeks to maintain or improve the health of older adults as they age and to provide participants with support to learn how to manage their health on their own. The project's low-cost core components include a health-enhancement program with mentors, a lifetime fitness program, and a chronic disease self-management workshop. There are several partners and funding sources for the project, and all project components are evidence-based, with all participants tested on their health outcomes annually.

Project Enhance administers two award-winning, community-based health programs for older adults, Enhance Fitness and Enhance Wellness. Information about this program is available online at http://www.seniorservices.org/wellness/wellness.htm. Based on research and hands-on experience, these evidence-based programs can now be found at > 80 sites around the country and can be implemented at senior centers, hospitals, assisted-living facilities, and continuing-care retirement communities.

Many municipalities and counties have special transportation for elders. This transportation is part of the public transportation system and often

provides door-to-door service for appointments, shopping, errands, and other needs. The fares are often reduced and sometimes free. These services can be found using the local or county section of the yellow pages or contacting the county's department that oversees senior citizens or the Department on Aging. In addition, many volunteer groups, such as religious and service groups, provide transportation for seniors.

Conclusion

The majority of elderly people with diabetes are community dwelling. Thus, health care providers should be aware of the challenges these elders and their caregivers face and identify strategies to not only improve care, but also relieve the burdens of many caregivers. Improving outcomes of care for any chronic disease cannot be accomplished solely by face-to-face encounters between patients and various health professionals. Indeed, many of the problems faced by elderly patients with diabetes have led to the development of a number of community-based programs that can be copied or adapted in a variety of settings in almost any community. These programs can be very useful additions to the usual care provided by health professionals and the resources available through such groups as the ADA.

References

[1]Cowie CC, Rust KE, Byrd-Holtr DC, Eberhardt MS, Flegal KM, Engelgau MM, Saydah SH, Williams DE, Geiss LS, Gregg EW: Prevalence of diabetes and impaired fasting glucose in adults in the U.S. population: National Health and Nutrition Examination Survey 1999–2002. *Diabetes Care* 29:1263–1268, 2006

[2]Leontos C, Gordon C, Maldague S, Dorsett BM: Live well, live long: steps to better health. In *Diabetes Prevention and Management: Small Steps With Big Rewards*. San Francisco, Calif., American Society on Aging and Centers for Disease Control and Prevention, 2006. Available online from www.asaging.org/cdc

[3]Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: Frailty: emergence and consequences in women aged 65 and older in the Women's Health Initiative Observational Study. *J Am Geriatr Soc* 53:1321–1330, 2005

[4]Bell RA, Camacho R, Goonan K, Duren-Winfield V, Anderson RT, Konen JC, Goff DCJ: Quality of diabetes care among low-income patients in North Carolina. *Am J Prevent Med* 21:124–131, 2001

[5]Smith NL, Savage PJ, Heckbert SR, Barzukay JI, Bittner VA, Kuller LH, Psaty BM: Glucose, blood pressure, and lipid control in older people with and without diabetes mellitus: the Cardiovascular Health Study. *J Am Geriatr Soc* 50:416–423, 2002

[6]Min LC, Reuben DB, MacLean CH, Shekelle PG, Solomon CG, Higashi T, Chang JT, Roth CP, Kamberg CJ, Adams J, Young RT, Wenger NS: Predictors of overall quality of care provided to vulnerable older people. *J Am Geriatr Soc* 53:1705–1711, 2005

[7]Gilden JL, Hendryx MS, Clar S, Casia C, Singh SP: Diabetes support groups improve health care of older diabetic patients. *J Am Geriatr Soc* 40:147–150, 1992

[8]Bruce DG, Casey GP, Grange V, Clarnette RC, Almeida OP, Foster JK, Ives FJ, Davis TM: Cognitive impairment, physical disability and depressive symptoms in older diabetic patients: the Fremantle Cognition in Diabetes Study. *Diabetes Res Clin Pract* 61:59–67, 2003

[9]California Healthcare Foundation, American Geriatrics Society Panel on Improving Care for Elders with Diabetes: Guidelines for improving the care of the older person with diabetes mellitus. *J Am Geriatr Soc* 51:S265–S280, 2003

[10]Najm W, Reinsch S, Hoehler F, Tobis J: Use of complementary and alternative medicine among the ethnic elderly. *Altern Ther Health Med* 9:50–57, 2003

[11]Wallace SP: *Data from the 2001 California Health Interview Survey and 2000 U.S. Census: Health of Older Californians: County Data Book*. Oakland, Calif., Regents of the University of California, 2003

[12]Jerant AF, von Friederichs-Fitzwater MM, Moore M: Patients' perceived barriers to active self-management of chronic conditions. *Patient Educ Couns* 57:300–307, 2005

[13]Vass M, Avlund K, Lauredsen J, Hendricksen S: Feasible model for prevention of functional decline in older people: municipality-randomized, controlled trial. *J Am Geriatr Soc* 53:563–568, 2005

[14]Skelton DA, Beyer N: Exercise and injury prevention in older people. *Scand J Med Sci Sports* 13:77–85, 2003

[15]Hennessy CH, John R, Anderson LA: Diabetes education need of family members caring for American Indian elders. *Diabetes Educ* 25:747–754, 1999

[16]Lackey NR, Gates MF: Adults' recollections of their experiences as young caregivers of family members with chronic physical illnesses. *J Adv Nurs* 34:320–328, 2001

[17]Langa KM, Vijans S, Hayward RA, Chernew ME, Blaum CS, Kebeta DR, Weir DR, Katz SJ, Willis RJ, Fendrick AM: Informal caregiving for diabetes and diabetic complications among elderly Americans. *J Gerontol Psych Sci Soc Sci* 57:S177–S186, 2002

[18]Lee S, Kawachi I, Grodstein F: Does caregiving stress affect cognitive function in older women? *J Nerv Ment Dis* 192:51–57, 2004

[19]McKinlay JB, Crawford SL, Tennstedt SL: The everyday impacts of providing informal care to dependent elders and their consequences to the care recipients. *J Aging Health* 7:497–528, 1995

[20]Faison KJ, Faria SH, Frank D: Caregivers of chronically ill elderly: perceived burden. *J Comm Health Nurs* 16:243–253, 1999

[21]Sewitch MJ, McCusker J, Dendukuri N, Yaffe MJ: Depression in frail elders: impact on family caregivers. *Int J Geriatr Psych* 19:655–665, 2004

[22]Ekwall AK, Sivberg B, Hallberg IR: Loneliness as a predictor of quality of life among older caregivers. *J Adv Nurs* 49:23–32, 2005

[23]Silliman RA, Bhatti S, Khan A, Dukes KA, Sullivan LM: The care of older persons with diabetes mellitus: families and primary care physicians. *J Am Geriatr Soc* 44:1405–1406, 1996

[24]Samuel-Hodge CD, Headen SW, Skelly AH, Ingram AF, Keyserling TC, Jackson EJ, Ammerman AS, Elasy TA: Influences on day-to-day self-management of type 2 diabetes among African-American women: spirituality, the multicaregiver role, and other social contest factors. *Diabetes Care* 23:928–933, 2000

[25]Brownson CA, Lovegreen SL, Fisher EB: Community and society support for diabetes self-management. In *The Art and Science of Diabetes Self-Management Education: A Desk Reference for Healthcare Professionals*. Mensing C, Ed. Chicago, American Association of Diabetes Educators, 2006, p. 1134–1138

[26]Van Korff M, Gruman J, Schaefer J, Curry SJ, Wagner EH: Collaborative management of chronic illness. *Ann Intern Med* 127:1097–1002, 1997

[27]Leveille SG, Wagner EH, Davis CL, Grothaus L, Wallace J, LoGerfo M, Kent D: Preventing disability and managing chronic illness in frail older adults: a randomized trial of a community-based partnership with primary care. *J Am Geriatr Soc* 46:1191–1198, 1998

[28]Schulz AJ, Zenk S, Odoms-Young A: Healthy eating and exercising to reduce diabetes: exploring the potential of social determinants of health frameworks within the context of community-based participatory diabetes prevention. *Am J Public Health* 95:645–651, 2005

[29]Lorig KR, Sobel DS, Ritter PL, Laurent D, Hobbs M: Effect of a self-management program on patients with chronic disease. *Eff Clin Pract* 4:256–262, 2001

Linda B. Haas, PhC, RN, CDE, is the endocrinology clinical nurse specialist in the Department of Primary and Specialty Medical Care at the VA Puget Sound Health Care System, Seattle Division, and a clinical assistant professor at the University of Washington School of Nursing in Seattle.