DIABETES
SELF-CARE ASSESSMENT

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Diabetes is a common diagnosis for home care patients. Conducting an assessment of diabetes self-care management knowledge and skills can identify areas for improvement and support and pinpoint individual self-care barriers. This article will provide targeted questions that may be used by the home care nursing professional when conducting such an assessment.

Introduction

Diabetes mellitus is a chronic condition that affects more than 25 million Americans; in 2010 almost 27% of those 65 years and older had diabetes (National Diabetes Information Clearing House, 2011). According to the Centers for Disease Control and Prevention, diabetes was listed as a primary diagnosis in 688,000 hospital discharges and as a secondary diagnosis in more than 5 million discharges (Centers for Disease Control and Prevention, 2009). It is estimated that Medicare home health use and payments included 125 million home healthcare agency visits in 2011 (National Association of Home Care and Hospice, 2014).

Because so many people have diabetes, it is likely that it is listed as a primary or secondary reason for a referral for many patients receiving home healthcare. Unfortunately, people with diabetes are sometimes labeled as "noncompliant" or "nonadherent" when they do not follow the prescribed self-care regimen. As nurses and health educators it is well worth the effort to investigate the "why" behind the behavior. Noncompliance may be because of factors such as fear, time commitments, lack of support, financial constraints, depression, frustration, or knowledge deficit. Taking the time to do a thorough assessment of the barriers to self-care, diabetes self-care knowledge, and problem-solving skills can really pay off in ways that can streamline nursing time and increase patient satisfaction. In a recent study, people with diabetes felt that providers did not understand or appreciate the difficulties of living with diabetes or its complications, and many noted that care was not individualized (Beverly et al., 2014). Patients will be grateful for the professional who takes a personal interest in their challenges. During assessment, it is important to acknowledge the patient's experience, personal challenges, and success with diabetes and other healthcare issues.

Some patients with diabetes may never have achieved glucose control. Unfortunately, physicians may be less concerned with hyperglycemia than the primary diagnosis or may prefer that their patient's glucose remains higher to avoid hypoglycemia (Linekin, 2003). A comorbid condition may be perceived as more serious. If diabetes is not the primary reason for home care services, glucose monitoring and diabetes self-care may not be included in the reason for referral; however, it is important to recognize how

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uncontrolled glucose may affect general wellness and recovery from the primary condition. Not only can elevated glucose in diabetes lead to increased incidence of microvascular complications such as neuropathy, retinopathy, and nephropathy, elevated glucose can also lead to worse outcomes for patients with stroke, wound infection, and myocardial infarction (Umpierrez et al., 2012).

The key nursing intervention in diabetes is education (Hunt, 2013). The American Diabetes Association (ADA) supports diabetes self-care education for all people with diabetes, describing it as facilitating the knowledge and skill necessary to make informed decisions through the process of incorporating needs, goals, and life experiences of the person with diabetes (ADA, 2014). The objective being to support informed decision making, self-care behaviors, problem solving, and active collaboration with the healthcare team. In a recent position statement, both the ADA and the European Association for the Study of Diabetes agreed to adopting a patient-centered approach that is "respectful of and responsive to individual patient preferences, needs, and values" (Inzucchi et al., 2012). Before beginning an individualized education plan, however, an individual assessment is recommended (Funnell et al., 2012). Ask your patient about their previous experience with formal diabetes education. Answers to questions such as, "Have you ever attended a diabetes class?," "Where and how long ago?," and "Have your ever received medical nutrition education and had an individualized meal plan?" can be informative of the patient's previous exposure to diabetes self-care information.

Glucose Monitoring

Glucose monitoring is recommended for people with diabetes (ADA, 2014) but not all people with diabetes monitor their glucose. Although it can be considered a "vital sign" for people with diabetes, some do not own a meter or use the one they have. Ask, "How important is it that you monitor your blood sugar?" or "How sure are you that you can monitor your blood sugar at least once a day?" Ask the patient to rate his or her answers from 0 to 10 with 10 being the most sure and most confident. Careful assessment can help identify the barriers for a particular patient. There may be many including the cost of supplies, pain of obtaining a blood sample, inconvenience, time constraints, the perceived value of testing, or the disappointing results (Swigert, 2014). In one

study of underserved Medicare patients using insulin, only 33% reported monitoring more than once per day (Remler et al., 2011).

When exploring barriers to glucose monitoring you may first want to confirm that your patient has the necessary supplies and that the meter is in working order. Check the meter memory to determine when and how often the patient monitors or ask, "What time of day do you check your blood sugar?" Patients who monitor only fasting glucose are not getting the full picture of their diabetes control. Asking for a demonstration of the meter will provide you with information about patient technique. Inadequate cleaning of the site for lancing or underdosing the test strip can lead to inaccurate results. Ask your patient about their "usual" results or expectations, "What kind of numbers do you get when you check your blood sugar? Are you happy about that?" The answers may reveal the understanding of glucose control and/or personal goals. You may also ask about trouble shooting with such questions as, "How do you know your meter is accurate?" or "What would you do if the result was above 250 mg/dL or below 70 mg/dL.?" Another area to explore is family support for glucose monitoring. Rosland et al. (2008) found the association between glucose monitoring and family support was stronger than other self-care activities.

Medications

Oral and injectable diabetes medications may be used for optimal glucose control. The complexity of the diabetes medication regimen in addition to medications required for other conditions may serve as a barrier. Ask how the patient is able to manage taking multiple medications. Again, explore the barriers to medication adherence through discussions with the patient and caregivers. Some of the same barriers that apply to glucose monitoring may apply to medication adherence such as cost, convenience, time constraints, and perceived benefit. Additionally, experiences of medication side effects including fear of hypoglycemia may apply.

Ask your patient to name the specific brand and type of insulin they take and which insulin pen or syringe size they use. Explore the time of day insulin is taken. Is it in relation to food intake, glucose monitoring test results, or an activity? Does the time vary significantly from day to day? Ask, "Do you ever change your insulin dose? When and how do you decide to do this?" Again, having your patient or caregiver demonstrate the preparation and administration of insulin or other injectable medications for diabetes can reveal areas for adjustment or education. Perhaps pain or fear of injecting is a concern. "Where do you inject? Do you change where you inject every day?" Questions such as, "What would you do if you missed a dose of insulin?," "How often does this happen?," or "Is there a time you might call your doctor about your insulin dose?" may expose potential discussion topics. If insulin is to be taken in varying doses based on a blood glucose result, confirm that the patient is able to determine the proper dose. Give examples of glucose levels and ask the patient to tell you how much insulin they would take based on that particular glucose level.

Similarly, for oral medications, explore any adverse effects that may interfere with consistent medication use. Does your patient know which medications are prescribed specifically for diabetes? Ask: "How and when are you supposed to take this medication?," "What would you do if you missed a dose?," "Are there ever times you don't take it on purpose?," "How often do you forget to take the medication?," and "What would you do if you thought the medication was not working?" If your patient often forgets doses, discuss ways to help remember such as placing morning medications near the toothbrush or cereal bowl used daily.

With many diabetes medications it is important that the patient understands the relationship between the drug action, food intake, and activity. Taking a sulfonylurea without eating greatly increases the risk of hypoglycemia. Exploring the timing of medication use can be helpful. Glyburide and glimepiride are best taken with breakfast, whereas glipizide is best taken 30 minutes before breakfast. A drug prescribed "twice a day" may be taken by the patient with breakfast at noon and dinner at 4:00 p.m. when a wider time spacing of doses would be optimal. It is also possible that the patient may have general literacy or health literacy limitations that interfere with medication taking (King et al., 2011).

Meal Planning

Individualized meal planning is recommended for people with diabetes (ADA, 2014), ideally conducted by a professional with expertise in diabetes. For many patients and families this is a very challenging aspect of self-care. Families and caregivers should be included in this discussion.

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A supportive spouse is crucial in making lifestyle changes, particularly in dietary behaviors (Rintala, 2013). Assessing current behaviors will help in recognizing if dietary habits contribute to problems with glucose control. Discuss access to foods such as fruits and vegetables, and what is locally available and affordable for your patient.

It is important to assess current practices by asking about eating habits. Questions such as, "What time do you get up?" and "What time do you eat your first meal?" may provide insight. Other questions that will promote discussion include: "Describe your typical or favorite meal," "Do you ever skip a meal?," "What is your largest meal of the day?," "What do you eat when you want a snack?," or "Do you follow a meal plan?"

Assess patient knowledge of foods that have the greatest potential for elevating blood glucose. As carbohydrates have the greatest effect on blood glucose, assess that your patient is able to identify which of the foods they typically eat contain carbohydrate. Does he or she recognize that foods high in carbohydrate will contribute to elevated glucose? You might ask "Which food would be more likely to raise your blood sugar, fried chicken or mashed potatoes?" The patient should be able to identify that potatoes are primarily carbohydrate and would have a greater impact, whereas fried chicken contains fat and protein. Ask for a can or box containing a commonly consumed food. Is the patient able to read at least the serving size and carbohydrate content? Questions like, "Do you measure your portion sizes?" and "Do you limit yourself to a certain number of carbohydrates per meal?" can show the degree of understanding of meal planning. Without these basic skills or access to diabetes education regarding meal planning, consistent glucose control is less likely. Your patients' meals may vary widely in carbohydrate content from meal to meal or day to day. A referral to a dietitian for evaluation and teaching may be needed.

Hypoglycemia

Any patient taking a glucose-lowering drug alone or in combination with insulin must be alert to the risks of hypoglycemia. Left untreated, hypoglycemia can lead to confusion, loss of consciousness, seizure, coma, and death. Furthermore, those who experience frequent hypoglycemia may not feel symptoms (Seaquist et al., 2013). Does your patient recognize their risk potential? It is valuable to inquire if the patient has ever experienced low blood sugar. Ask, "Have you ever had low blood sugar? How did you feel? Why might this have happened?" The patient should be able to identify potential contributing factors related to when and why the low glucose occurred, for example, a delayed meal or extra activity. Ask, "How did you know your glucose was low? How low does it go before you feel you need to take action? What action do you take?" Confirming symptoms of low blood glucose by using the glucose meter is the most reliable method. Assess patient knowledge of the symptoms of hypoglycemia such as feeling shaky, sweaty, hungry, or angry. Some patients do not experience these symptoms, putting them at greater risk of severe hypoglycemia. Ask the patient and caregiver if they have ever needed assistance in treating or recognizing low blood sugar. Has it ever been necessary to activate emergency care? Explore how often hypoglycemia occurs. Frequent or severe episodes of hypoglycemia warrant further investigation and may require medication adjustment.

Most often low glucose can be successfully treated with the ingestion of 15 grams of carbohydrate. Common choices are three to four glucose tablets or 4 ounces of fruit juice. Having glucose tablets available to treat hypoglycemia is the best plan of action but ask your patient what they have used in the past and what they have on hand for treatment if needed. "Would your family members know what to do if you need help?" The person with diabetes and caregivers should be able to identify the symptoms of hypoglycemia and start treatment. Ask, "Do you carry a snack or glucose tablets with you when you leave the house?" Caregivers of patients with Type 1 diabetes should be familiar with glucagon injection if the patient becomes unconscious or unable to swallow. Ask, "Is there a glucagon kit in the house? Who has been trained to use it? Do you know when it expires?"

Foot Care

During the general assessment, visualize the feet and check for sensation to light touch in both feet. Is your patient able to feel your touch with their eyes closed? Basic daily foot care may be neglected in persons dealing with more complex illnesses; however, identifying risk factors and finding foot lesions early may prevent or delay infection or amputation. Risk factors for the development of foot ulcers and amputation include previous amputation or foot ulcer, peripheral neuropathy, foot deformity, peripheral vascular disease, visual impairment, diabetic nephropathy (especially patients on dialysis), poor glucose control, and cigarette smoking (ADA, 2014).

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Daily inspection of the skin and feet may catch problems early to prevent or delay adverse outcomes (ADA, 2004). Ask your patient, "Have you seen a podiatrist or had a comprehensive foot exam in the past year?" Is there a history of diagnosed peripheral vascular disease or neuropathy? Patients with little or no sensation in the foot are particularly at risk for injury. Distal neuropathy is the greatest predictor of foot ulcer development and amputation (ADA, 2004).

Skin integrity must be assessed including the bottom of the foot, the heel, and between the toes. Ask your patient, "How often do you check your feet and what do you look for? Are you able to see the bottom of your feet?" Many do not have the flexibility to fully visualize the entire foot. Placing a mirror on the floor or using a mirror on a telescoping rod can help in viewing the bottom of the feet; however, it may be necessary to enlist caregivers for inspection and care. Also ask, "How do you trim your toenails?" and if present, "How do you care for a callus?" Footwear in the home and outside the home should be assessed. Ask, "What do you do to protect your feet from injury?" Wearing ill-fitting shoes, being barefoot, wearing no socks with shoes, or wearing tightly constricting socks can add significant risk for injury. Patients and caregivers may be unknowingly engaging in risky care practices.

Symptom recognition is important in identifying when to seek help. Ask, "What would prompt you to call your doctor or go to the emergency room?" Patients may have misconceptions about what requires immediate attention and what can wait for another day or future office visit.

Activity

Exercise is an important part of the diabetes treatment plan and regular activity can improve glucose control, help with weight loss, reduce cardiovascular risk factors, and promote general well-being (ADA, 2014). Part of an overall assessment should include a discussion about your patient's current activity level and how it may have changed in the recent past. Ask, "Do you consider yourself physically active? What types of activities do you engage in? Is this more or less than you did last month or last week?" Drastic changes in activity level from day to day may put the patient at risk for either high or low blood glucose. It is important that patients recognize the relationship between exercise and glucose levels.

Safety during exercise and activity is paramount. Monitoring glucose pre- and postexercise will promote understanding of glucose changes and allow avoidance of hypoglycemia during exercise. Patients who take insulin or insulin secretagogues should have a carbohydrate-containing snack if the glucose level is ≤100 mg/dL preexercise (ADA, 2014). All who engage in exercise should carry hypoglycemia treatment with them and wear diabetes medical identification. Does your patient recognize they should stop and rest if they experience shortness of breath, pain, or dizziness? Patients considering starting a new exercise regimen should consult with their healthcare provider before beginning. Additional safety measures such as appropriate clothing and footwear during exercise should be reviewed. Diabetes complications such as cardiovascular disease, peripheral vascular disease, neuropathy, and retinopathy may affect the type and degree of physical activity the patient can engage in.

Conclusion

Helping people with diabetes to feel successful and confident in self-management and helping them to recognize the personal benefits and effectiveness of treatment can increase adherence (Gherman et al., 2011). Conducting an

assessment of current self-care practices and diabetes problem solving can identify areas for adjustment and assist in planning care. Self-management education improves control of Type 2 diabetes, especially when delivered as short interventions allowing the patient to remember and better synthesize information (Minet et al., 2010). After a thorough assessment and evaluation of the patient's readiness for learning, home healthcare clinicians have the opportunity to engage in realistic goal setting, evaluating the commitment to behavior change before delivering targeted education that is meaningful and useful to the patient. The American Association of Diabetes Educators (AADE) has developed a program aimed toward measurable behavior change in areas including healthy eating, being active, monitoring, taking medication, problem solving, risk reduction, and coping (AADE, 2014). Formulate a plan of care and education that will focus on optimal outcomes while meeting individual patient needs.

Medicare supports 10 hours of diabetes education as well as 3 hours of medical nutrition therapy for initial education. Annually thereafter, patients can take advantage of 2 hours of education and 2 hours of medical nutrition therapy. Medicare has recognized the importance of ongoing follow-up education in diabetes care. Ideally, at some point, a referral for follow-up to an outpatient education program that meets the National Standards for Diabetes Self-Management Education is highly recommended. ☗

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REFERENCES

American Association of Diabetes Educators. (2014). *AADE7 self-care behaviors*. Retrieved from http://www.diabeteseducator.org/ProfessionalResources/AADE7/#Toolsforhealthcareprofessionals

American Diabetes Association. (2004). Preventative foot care in diabetes. *Diabetes Care*, *27*(Suppl. 1), S63-S64.

American Diabetes Association. (2014). Standards of medical care in diabetes—2014. *Diabetes Care*, *37*(Suppl. 1), S11-S66.

Beverly, E., Wray, L. A., Ching-Ju, C., & LaCoe, C. (2014). Older adults' perceived challenges with health care providers treating their Type 2 diabetes and comorbid conditions. *Clinical Diabetes, 32*, 12-17.

Centers for Disease Control and Prevention. (2009). *Diabetes public health resource: Hospitalization.* Retrieved from http://www.cdc.gov/diabetes/statistics/hospitalization_national.htm

Funnell, M. M., Brown, T. L., Childs, B. P., Haas, L. B., Hosey, G. M., Jensen, B., …, Weiss, M. A. (2012). National standards for diabetes self-management education. *Diabetes Care*, *35*(Suppl. 1), S101-S108.

Gherman, A., Schnur, J., Montgomery, G., Sassu, R., Veresiu, I., & David, D. (2011). How are adherent people more likely to think? A meta-analysis of health beliefs and diabetes self-care. *Diabetes Educator, 37*(3), 392-408. doi:10.1177/0145721711403012

Hunt, C. (2013). Self-care management strategies among individuals living with Type 2 diabetes mellitus: Nursing interventions. *Nursing: Research and Review, 3*, 99-105. doi:10.2147/NRR.S49406

Inzucchi, S. E., Bergenstal, R. M., Buse, J. B., Diamant, M., Ferrannini, E., Nauck, M., …, Matthews, D. (2012). Management of hyperglycemia in Type 2 diabetes: A patient-centered approach: Position statement of the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) *Diabetes Care, 35*(6), 1364-1379.

King, S. R., McCaffrey, D. J., & Bouldin, A. S. (2011). Health literacy in the pharmacy setting: Defining pharmacotherapy literacy. *Pharmacy Practice, 9*(4), 213-220.

Linekin, P. (2003). Home health care and diabetes assessment, care, and education. *Diabetes Spectrum*, *16*(4), 217-222.

Minet, L., Møller, S., Vach, W., Wagner, L., & Henriksen, J. E. (2010). Mediating the effect of self-care management intervention in type 2 diabetes: A meta-analysis of 47 randomised controlled trials. *Patient Education and Counseling, 80*(1), 29-41.

National Association of Home Care and Hospice. (2014). Retrieved from http://www.nahc.org

National Diabetes Information Clearing House. (2011). *National diabetes statistics 2011*. Retrieved from http://diabetes.niddk.nih.gov/dm/pubs/statistics/#fast

Remler, D. K., Teresi, J. A., Weinstock, R. S., Ramirez, M., Eimicke, J. P., Silver, S., & Shea, S. (2011). Health care utilization and self-care behaviors of Medicare beneficiaries with diabetes: Comparison of national and ethnically diverse underserved populations. *Population Health Management,14*(1), 11-20.

Rintala, T. M., Jaatinen, P., Paavilainen, E., & Astedt-Kurki, P. (2013). Interrelation between adult persons with diabetes and their family: A systematic review of the literature. *Journal of Family Nursing, 19*(1), 3-28. doi:10.1177/1074840712471899

Rosland, A. M., Kieffer, E., Israel, B., Cofield, M., Palmisano, G., Sinco, B., …, Heisler, M. (2008). When is social support important? The association of family support and professional support with specific diabetes self-management behaviors. *Journal of General Internal Medicine*, *23*(12), 1992-1999. doi:10.1007/s11606-008-0814-7

Seaquist, E. R., Anderson, J., Childs, B., Cryer, P., Dagogo-Jack, S., Fish, L., …, Vigersky, R. (2013). Hypoglycemia and diabetes: A report of a workgroup of the American Diabetes Association and the Endocrine Society. *Diabetes Care, 36*(5), 1384-1395. doi:10.2337/dc12-2480

Swigert, T. (2014, January 28-34). Blood glucose monitoring: Overcoming obstacles. *Practice*.

Umpierrez, G. E., Hellman, R., Korytkowski, M. T., Kosiborod, M., Maynard, G. A., Montori, V. M., …, Endocrine Society. (2012). Management of hyperglycemia in hospitalized patients in non-critical care setting: An endocrine society clinical practice guideline. *Journal of Clinical Endocrinology and Metabolism, 97*(1), 16-38.