

Case Study: Care Coordination and Case Finding of Undetected Depression in a 72-Year-Old Man With Type 2 Diabetes

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Presentation

In 2001, M.G., a 72-year-old white man, enrolled in a diabetes management program sponsored through his health benefits program. This is a voluntary program that includes periodic telephone assessment of diabetes self-management. In addition to self-reported information, the program also utilizes claims and lab data made available through the health plan. After each assessment, the program mails summary reports to participating patients and their physicians. These reports support better communication between patients and physicians regarding information gathered during program assessments that falls outside the recommendations of the American Diabetes Association (ADA).

In addition to asking the assessment survey questions, the program staff also provides patient education materials based on the ADA's current clinical practice recommendations and support patients and their practitioners with care coordination and diabetes management supplies. Between assessments, participants can access the program staff through a toll-free telephone number 24 hours a day, 365 days a year.

M.G.'s case history

At enrollment, M.G. provided demographic information and medical history indicating that he is single, elderly, living alone, and responsible for his own self-care. M.G.'s type 2 diabetes was diagnosed 5 years before he enrolled in the program and is controlled by diet and activity alone.

In addition to diabetes, he has been treated for other conditions, including

chronic back pain, hyperlipidemia, coronary artery disease, neuropathy, arthritis, and cancer. Several physicians share responsibility for his medical care; some are from a large multi-physician group, and others are from a Veterans Affairs clinic. M.G. complains that his care is fragmented and that the advice and recommendations of his doctors frequently clash. He often feels caught in the middle of these disagreements and sometimes does not know whose advice to follow. This has frustrated him tremendously and caused him to lose faith and trust in the health care system.

Lab data confirm that M.G. has been successful in maintaining his blood glucose levels within the targets set forth in the ADA's clinical practice guidelines (hemoglobin A_{1c} [A1C] < 7%). Additionally, all of his assessments and lab results have been consistent with the program's clinical goals for diabetes control (A1C results < 7%, blood pressure < 130/80 mmHg, LDL cholesterol < 100 mg/dl, HDL cholesterol > 40 mg/dl, and triglycerides < 150 mg/dl). M.G. has kept his routine physician appointments, and in turn, his physicians have performed the screening tests recommended in the ADA guidelines (dilated eye examination, thorough foot exam, and screening for urine protein). M.G. has not required any emergent or inpatient care since enrolling in the program.

Change of health status

About a year after his enrollment in the program, during a routine assessment, M.G.'s nurse detected that he was not acting like himself. Although his

responses to most of the assessment questions were well within diabetes care guidelines, he appeared to be somewhat upset and agitated. He reported that over the past 90 days he had lost considerable weight, ~23 lb. He said he had not been attempting to lose weight, but had lost his appetite and did not have the energy or desire to prepare meals. Additionally, the assessment of M.G.'s functional health status indicated that over the past 4 weeks, he had been feeling down, had less energy, and had not been able to attend to his normal activities of daily living.

The nurse asked if he had spoken with his doctors about the changes he had noted in his health. M.G. indicated that he had not and stated emphatically in an agitated tone that he would not. When asked why, M.G. stated that he did not trust his physicians and felt that they really did not care about him. He talked again about his fragmented care and his frustration with getting different recommendations from different providers. Upon further discussion, the nurse determined that there was one physician with whom M.G. still had a good working relationship.

Before completing the assessment, M.G. volunteered that he was also upset about a letter that he had recently written to his children. He had not received any response and said that this deeply hurt him and that he felt his children did not care about him anymore. M.G. went on to say that he felt terrible, that he was tired, and that he sometimes felt like he just wanted to give up. When the nurse asked if he had any thoughts of hurting himself or of suicide, M.G. said no.

After completing the assessment, the nurse decided that, in addition to mailing out the routine report, she needed to contact a physician and report her concerns about M.G.'s state of mind and recent weight loss. The physician she contacted was the one in whom M.G. said he still had confidence. The physician called M.G. after hearing from the nurse and made arrangements for an office visit that same day. Subsequently, the physician diagnosed clinical depression and started M.G. on an antidepressant medication.

Epilogue

M.G. accepted the treatment recommended by his physician for depression. About 8 weeks after initiation of his antidepressant therapy, M.G. called the program nurse to let her know that he had not been completely truthful during his earlier assessment and that, in fact, he had actually been planning a suicide attempt. Now that he felt better, he said he wanted her to know and that he felt he owed her his life. He thanked her for listening to him and caring enough to make sure he got the medical care he needed. He reported that his appetite had returned, that he had regained his weight, and that he had been able to resume his activities of daily living.

Questions

1. How significant is depression as a comorbidity of diabetes?
2. What are common barriers to identifying depression in the primary care setting?
3. What disease management tools can be applied in the primary care setting to aid in depression case identification?

Commentary

This case provides the backdrop for some important lessons. First, it addresses the fundamental importance of coordinated care. Most patients want to have a physician oversee and coordinate their overall health care plan. Unfortunately, the reality of today's health care system

is that too many physicians find themselves overloaded by the volume of patients they are expected to see. They have difficulty finding the time to provide a satisfactory level of care coordination. They do the best they can, but many feel that they are forever attempting to squeeze more and more from office visits in which they must address not only patients' presenting chief complaint, but also their ongoing health management.^{1,2}

Second, this case illustrates how a program such as M.G.'s diabetes management program can provide valuable and timely alerts to physicians when their patients experience a significant decline in health status. In this case, the patient had not communicated with his health care provider and said he had no intention of doing so in the future. The program's post-assessment referral brought his situation to the physician's attention and opened an opportunity for him to reach out to M.G. and get him to come in for evaluation, diagnosis, and treatment. Although there is no way to know what would have happened to M.G. if he had not been participating in the program, or if his nurse had not contacted the physician after her assessment, the patient's feedback indicates that for him it was indeed the right action to take.

Prevalence of depression as a comorbidity of diabetes

Depression is a prevalent, serious, and costly comorbidity of diabetes. The literature indicates that the prevalence of depression in diabetes is probably twice that of the general population.^{3,4} There is also evidence that the costs of care escalate for depressed diabetic patients. One recent study reported that total annual costs were 4.5 times higher for depressed diabetic patients than for their nondepressed diabetic counterparts.⁴

The prevalence of diabetes is disproportionately high among senior citizens. Elderly patients are at higher risk for depression and suicide. Risks are highest when seniors become socially isolated,

lose the contact and/or support of family and friends, or are widowed or divorced.⁵ As health care providers, we need to educate our patients and their families about depression, its signs and symptoms, and the benefits and availability of early identification and treatment.

Undetected depression can interfere with metabolic control. Patients who are depressed are robbed of the energy and motivation they need to follow their treatment plan. Studies have shown that even mildly depressed patients are more likely to have problems maintaining blood glucose control and much less likely to attend to positive lifestyle behaviors.⁴ Without detection and appropriate treatment, depressed diabetic patients are likely to find themselves on a path that leads to isolation, hopelessness, and potentially serious deterioration of their health and well-being.

Barriers to early detection and treatment of depression in diabetes

There are many barriers to early diagnosis of depression as a comorbidity of diabetes. Some of the more common barriers include:

- The social stigma associated with the diagnosis of a mental health problem.
- The complex comorbid nature of diabetes and the expectation that it may be normal for diabetic patients to feel burdened by their diabetes and its management.
- Lack of access to providers for coordination of care. Many patients and providers feel constrained by the limited amount of time routinely available for care management.
- People may not recognize emotional symptoms as health related. They may instead see them as "personal issues" and feel that they should be capable of handling them on their own, without the involvement of the health care team.⁶

Clinical Pearls

- Depression screening can improve the identification of depressed adult

patients in the primary care setting. A 2002 report from the Agency of Healthcare Research and Quality's U.S. Preventive Services Task Force (USPSTF)⁷ supported the importance of depression screening in adults, but noted that there is as yet insufficient evidence regarding the accuracy and reliability of such screening in children.

- Commonly used depression screening tools include the Beck Depression Inventory, the Zung Self-Depression Scale, the General Health Questionnaire, the 2-Whooley Questions, and others. The USPSTF report concluded that evidence is currently insufficient to determine which of these tools perform better than others and encouraged providers to select tools that are validated and work best for their practice setting and patients.
- Follow-up of a depression diagnosis is essential. The USPSTF report encouraged providers to develop structured

processes and systems for ensuring adequate follow-up.

- It is important for patients to learn about depression and other mental health issues as part of their ongoing diabetes self-management program. In addition to formal instruction, exam room posters can play a valuable role in educating and reminding patients and medical personnel about the signs, symptoms, and treatment options for depression. As part of a suicide prevention program, the former U.S. Surgeon General and the National Institute of Mental Health (NIMH) created information that can be downloaded and used on exam room flyers at no charge.⁵

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Note of disclosure: *The case referenced in this article was an actual case taken from Matria Healthcare, Inc.'s diabetes disease management program, of which Ms. Tibbetts is an employee.*

Case Study: A 64-Year-Old Man With a 9-Year History of Type 2 Diabetes in Whom Insulin Therapy Led to Improved Control But No Weight Gain After 6 Months

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Presentation

L.T. is a 64-year-old white man with a 9-year history of type 2 diabetes. He suffered an inferior wall myocardial infarct 2 years ago. He also has a 7-year history of hypertriglyceridemia and hypercholesterolemia, as well as gout and abdominal obesity. He has no history of cigarette smoking.

At his initial visit to the

endocrinology clinic, his weight was 242 lb., and he was 70 inches tall. Thus, his BMI was 35 kg/m². His blood pressure was 130/78 mmHg, and his hemoglobin A_{1c} (A1C) result was 9.0% (normal: 4.3–6.1%) on 2,000 mg/day of metformin and 10 mg/day of glyburide. A lipid panel revealed fasting serum triglycerides of 288 mg/dl, total cholesterol of 160 mg/dl,

HDL cholesterol of 36 mg/dl, and LDL cholesterol of 66 mg/dl. His fasting blood glucose level was 331 mg/dl. In addition to metformin and glyburide, medications included simvastatin, 10 mg/day; niacin, 750 mg twice daily; allopurinol, 300 mg/day; and aspirin, 325 mg/day.

L.T.'s primary care provider had been reluctant to start him on insulin,

even though he was taking close-to-maximal doses of oral hypoglycemic agents without achieving acceptable diabetes control. The provider worried that, once L.T. started on insulin, he would regain the 20 lb. he had lost since his myocardial infarct and that the negative impact of this weight gain would outweigh the positive impact of enhanced diabetes control on his overall health. Taking these concerns into account, the endocrinologist started L.T. on 10 units/day of glargine at bedtime, to be taken in addition to his regimen of metformin and glyburide.

L.T. and his wife then scheduled an appointment for medical nutrition therapy (MNT) with a registered dietitian who was a certified diabetes educator. L.T.'s 3-day food record showed excessive calorie intake with > 90–120 g of carbohydrate per meal. The dietitian taught the couple carbohydrate counting and fat modifications and encouraged them to keep food intake and self-monitoring of blood glucose (SMBG) records. The dietitian also recommended an individualized exercise program.

In the course of the next 6 months, L.T. saw the dietitian two times for reviews of the nutrition and exercise therapy and SMBG records. At these visits, patient food records were assessed for carbohydrate and fat as well as calorie intake. These records along with SMBG records and laboratory results served as a springboard for teaching the effect of the food plan on blood glucose results and lipids.

During that period, the patient's intake was approximately 1,500–1,800 kcal/day, with 60–75 g of carbohydrate/meal, and < 30% of total energy from fat. Foods with lower saturated fat content were emphasized. The patient was riding a stationary bicycle for 1 hour/day. After discussing patient preferences, the dietitian suggested gradually increasing exercise by adding a walk 3–4 times/week.

Throughout the course of MNT, the dietitian titrated L.T.'s insulin dose weekly via telephone, working under a

protocol approved by the endocrinologist to achieve a fasting blood glucose level \geq 80–100 mg/dl. L.T. experienced no hypoglycemia during this time.

After 6 months, L.T. had achieved an A1C of 7% on 14 units of glargine and his usual doses of metformin and glyburide. His weight was 234 lb. (a decrease of 8 lb.), his serum triglyceride level was 179 mg/dl (a decrease of 38%), and his HDL cholesterol was 39 mg/dl (an increase of 3 mg/dl). His blood pressure was 120/74 mmHg. Thus, he was able to lose 3% of his body weight while initiating insulin therapy and tightening glycemic control. In addition, both the patient and his wife commented on how significantly improved his mood and energy level were with more normalized blood glucose levels.

L.T. had tried unsuccessfully after his heart attack to lose weight and control his blood glucose. The addition of glargine with subsequent lowering of his blood glucose gave him hope and motivation to once again try to lower his weight. Once he saw the difference he could make in his blood glucose levels, he began exercising and following a healthy meal plan again in earnest.

Questions

1. Do all patients starting on insulin gain weight? How much weight gain is to be expected?
2. How would one optimize chances to limit weight gain or assist a patient in maintaining or even losing weight?
3. If this patient had gained weight instead of lost weight, would he have increased his risk of cardiovascular disease even though he dramatically improved his glycemic control?

Commentary

There is ample evidence in the literature to support the primary care provider's concern about L.T.'s potential weight gain. Weight gain is commonly seen when patients are started

on insulin. A recent quantification of this weight gain in patients with type 2 diabetes showed that it is modest; mean weight gain on a regimen of twice daily insulin was 3.3 kg during the first 6 months and 1.3 kg over the second 6 months.¹ Patients in the U.K. Prospective Diabetes Study (UKPDS) randomized to intensive control with sulfonylureas or insulin gained more weight than did those randomized to diet therapy alone. Patients treated with insulin gained about 4 kg, whereas those on chlorpropamide or glyburide gained 2.6 or 1.7 kg, respectively.² Additionally, the UKPDS showed that weight gain is also associated with treatment to lower blood pressure, particularly with β -blocker therapy.

Given that 90% of patients with type 2 diabetes are obese, additional weight gain is certainly a concern. Obesity is related to most cardiovascular risk factors and has been shown to induce multiple risk factors of cardiovascular disease. Obesity substantially increases the prevalence of arterial hypertension. It also increases the prevalence of dyslipidemia, is a major risk factor in the development of congestive heart failure, and induces left-ventricular hypertrophy. Lastly, obesity is an independent risk factor for cardiovascular disease, particularly sudden cardiac death.³ Obesity also appears to be an independent risk factor for two complications of type 2 diabetes. In the UKPDS, for every 0.1 unit increase in the waist-to-hip ratio, there was an increase of 15% in the risk for microalbuminuria. Patients with microalbuminuria are at increased risk of nephropathy and cardiovascular disease.⁴

However, there is also ample evidence to support the intensive treatment of hyperglycemia, even in, or perhaps especially in, patients with cardiovascular disease. Epidemiological studies have shown a link between severity of hyperglycemia and risk for cardiovascular disease.¹ The DIGAMI study⁵ hinted that insulin may reduce the risk

of cardiovascular disease in people with type 2 diabetes. And in the UKPDS, treatment of hyperglycemia and hypertension reduced the risk of diabetes complications. In particular, reducing a patient's A1C from 7.9 to 7.0% was associated with a 16% drop in risk of myocardial infarct ($P = 0.052$).² The intensive treatment of hyperglycemia with insulin serves to improve dyslipidemia even when a modest amount of weight is gained. In addition, quality-of-life issues are highly pertinent. Hyperglycemia induces fatigue, irritability, and depression in levels equivalent to an A1C of 9%.⁶

Different systems of MNT and different pharmaceutical regimens have been studied in an attempt to limit weight gain upon insulin initiation. Because this weight gain is seen to be caused by the retention of calories as glycosuria is decreased, advice on nutrition and exercise seems wise. MNT as performed by registered dietitians resulted in less weight gain at 6 months (1.3 vs. 3.3 kg) when therapy was intensified to improve glycemic control in a group of patients with type 2 diabetes.⁷ Patients who received MNT experienced no increase in waist-to-hip ratio and, therefore, no increased risk of cardiovascular disease as a result of this minimal weight gain. The addition of NPH insulin to an existing regimen of oral antidiabetic agents has been shown to induce less weight gain than does a two-injection insulin regi-

men only.⁸ In addition, glargine used once daily at bedtime results in significantly less weight gain than does NPH insulin.⁹

Because we now know that type 2 diabetes is a progressive disease and that pancreatic β -cell function deteriorates over time, eventually initiating insulin in type 2 diabetes has become a given. Insulin will prevent significant hyperglycemia and reductions in quality of life. Not all patients starting insulin will gain weight. For those who do, weight gain can be lessened with MNT and the use of newer insulin regimens. The UKPDS and other studies have shown that, for patients with pre-existing cardiovascular disease, initiating insulin and tightening glycemic control can significantly reduce the risk of cardiovascular disease despite possible modest weight gains. Thus, potential weight gain is not a viable reason for avoiding insulin therapy.

Clinical Pearls

- Fear of weight gain is not a valid reason to avoid intensive treatment of hyperglycemia with insulin therapy.
- The therapeutic impact of improved glycemic control trumps the potential modest weight gain resulting from initiation of insulin in patients with type 2 diabetes.
- MNT and newer insulins can help to minimize or prevent weight gain when initiating insulin therapy in type 2 diabetic patients.

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