

Innovations in Interdisciplinary Diabetes Management: When Better Isn't Good Enough

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Diabetes is one of the fastest growing diseases worldwide. The Centers for Disease Control and Prevention estimates that 25.8 million people in the United States have either diagnosed or undiagnosed diabetes.¹ Not only is the prevalence of diabetes increasing, but costs associated with this chronic disease are also growing at a dramatic and unsustainable rate. The cost of diabetes to the United States is \$174 billion, with \$116 billion attributed to direct medical costs. Medical expenditures are 2.3 times higher for patients with diabetes than for those without diabetes.²

As diabetes becomes an increasing medical and financial burden, the development of innovative improvement strategies that address the complexities and demands of managing chronic health conditions is of growing importance. To optimize diabetes management, the American Diabetes Association (ADA) recommends an organized, systematic approach, with involvement of a coordinated team of dedicated health care professionals working in an environment in which patient-centered, high-quality care is a priority.²

High-Intensity Diabetes Management Clinic

In September 2009, with clinical quality improvement in mind, the Phoenix, Ariz., Veterans Affairs (VA) Health Care System initiated a high-intensity diabetes management

(HIDM) clinic using a multidisciplinary approach (Figure 1). Patients were invited to enroll in the clinic if they met the following criteria: diagnosis of type 2 diabetes, A1C > 9%, on insulin, and seen by an endocrinology provider or the nurse diabetes educator at least once. Each HIDM clinic visit was 75 minutes long and consisted of five 15-minute appointments with a nurse diabetes educator, nutritionist, pharmacist, nurse practitioner/endocrinologist, and psychologist. Patients were scheduled for a total of four visits at 1-month intervals before being returned to usual care.

To evaluate the clinical outcomes achieved by the multidisciplinary HIDM clinic, a retrospective chart review was performed. Patients were

included if they met clinic enrollment criteria, were 18–75 years of age, had at least one A1C measurement in the 6 months before enrollment, completed three of the four scheduled clinic visits, and had at least one follow-up A1C measurement. Patients were excluded if they were followed by a non-VA endocrinologist, enrolled in alternative diabetes research studies, or had inadequate records.

For patients included in the retrospective chart review, completion of at least three of the four HIDM clinic visits was found to significantly reduce A1C ($P < 0.001$) and diastolic blood pressure ($P < 0.05$) and to increase the percentage of patients meeting blood pressure goals of < 140/90 mmHg ($P < 0.05$)

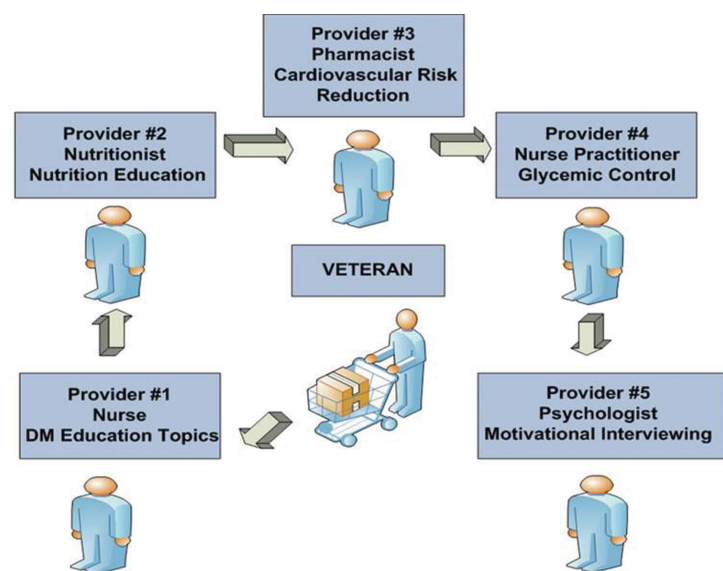


Figure 1. HIDM clinic flow in which the veteran patient spent 15 minutes with each provider, accounting for a total 75-minute appointment.

or < 130/80 mmHg ($P < 0.05$), and the number of patients on aspirin therapy ($P < 0.05$). Nonsignificant changes were observed in weight, BMI, systolic blood pressure, LDL cholesterol, albumin/creatinine ratio, number of patients meeting an LDL cholesterol goal of < 100 mg/dl, percentage of patients on angiotensin-converting enzyme inhibitor or angiotensin receptor blocker therapy, and percentage of patients on statin therapy. No emergency department visits or hospital admissions were recorded for participants during the study period.

The primary conclusion from this evaluation was that the HIDM clinic successfully achieved desired clinical outcomes among the patients who completed at least three of four scheduled visits. Although HIDM was clearly effective in achieving targeted clinical outcomes, success came at a considerable cost given the number of one-on-one appointments with multiple clinicians.

Shared Medical Appointments

Given the costs involved in the HIDM clinic and as a result of VA budget constraints, it was proposed to implement and evaluate a less resource-intensive approach to multidisciplinary diabetes care: the shared medical appointment (SMA) clinic model. SMAs are patient medical appointments in which a multidisciplinary team of providers sees a group of patients (typically 8–20) in a 1.5- to 2-hour visit.³ SMAs usually involve both a professional who is trained or skilled in delivering patient education or facilitating patient interaction and a practitioner with prescribing privileges.⁴

It is the opportunity for peer interaction, feedback, and support that generates success within SMAs. This is in contrast to the HIDM clinic, through which success was generated through sequential

visits with multiple providers. In an environment of limited financial and human resources, SMAs may offer an opportunity to utilize nonphysician providers to their fullest potential and to improve patient care, especially in patients with chronic illnesses such as diabetes.³

Although SMAs have been present in an array of primary care settings for some time, there remains uncertainty regarding their optimal design and impact. Based on a systematic review of 19 studies,⁴ SMAs generally have been led by teams of one to three clinicians, usually including a physician and/or a registered nurse. Typically, sessions involve fixed patient panels and include individual breakout sessions for medication management.⁴

Using the VA's *Shared Medical Appointments for Patients with Diabetes* manual, a toolkit for designing SMAs based on previously established and successful SMA programs, implementation of the diabetes SMA at the Phoenix VA began in 2012.³ First, the target population was identified. Because the intent of initiating the SMA model was to compare clinical outcomes to those achieved in the HIDM clinic, it was determined that the SMA program should have the same enrollment criteria: diagnosis of type 2 diabetes, A1C > 9%, on insulin, and seen by an endocrinology provider or the nurse diabetes educator at least once. After signing informed consent, patients attended four SMA sessions. The duration of each appointment was 90–120 minutes, and the four visits were completed over a 4- to 6-month period, with a group size of 8–12 patients.

Next, the diabetes SMA health care team was identified. The VA SMA manual identified three main roles necessary for each session: moderator, provider, and diabetes expert.³ It was decided that the

Phoenix VA diabetes SMAs would include a group facilitator/moderator and two providers. A team of diabetes specialists, including a clinical nutritionist, nurse diabetes educator, and psychologist, alternate facilitating each group. Education topics covered during visits include:

- Nutrition: macronutrient identification, portion sizes, nutritional label overview, identification of healthy eating options for snacking, and hypoglycemia
- Nursing: sick days, foot care, exercise, and diabetes-related complications
- Psychology: behavior changes, barriers to change, and motivational interviewing (MI).

Each visit includes a mix of information sharing, group discussion, and education. The core expertise required of the moderator is MI skills, which include techniques to create a patient-centered discussion.³ To prepare for the diabetes SMA, team members received 8 hours of MI training. Topics covered during training included a description of MI and its relevance to promoting patient change within the VA health care setting, as well as the techniques necessary for effective MI encounters. Training participants practiced MI techniques in simulated settings and developed a plan for their personal use and incorporation of MI within the diabetes SMAs. Additionally, an MI subject matter expert observed the diabetes SMAs to validate the health care team's MI skills.

The roles of the nurse practitioner/endocrinologist and pharmacists remained constant in the transition from the HIDM clinic to SMAs. Both providers continue to meet with patients individually by pulling them out of the group for personalized medication reviews and medication titrations based on

Table 1. Comparison of HIDM Clinic and SMAs

	HIDM Clinic	SMAs
Duration of clinic/week (hours)	3.5	2
Patients seen/clinic day (<i>n</i>)	10	8–12
Nurse practitioner presence	Visits 1–4	Visits 1–4
Pharmacist presence	Visits 1–4	Visits 1–4
Diabetes nurse educator presence	Visits 1–4	2 of every 4 visits
Psychologist presence	Visits 1–4	1 of every 4 visits
Clinical nutritionist presence	Visits 1–4	1 of every 4 visits

Table 2. Clinic Time Spent/Patient/Week for Each Provider (Hours)*

	HIDM Clinic	SMAs
Nurse practitioner	0.35	0.20
Pharmacist	0.35	0.20
Diabetes nurse educator	0.35	0.10
Psychologist	0.35	0.05
Clinical nutritionist	0.35	0.05

*Based on total clinic operating time.

assessed needs. Within the SMAs, it is recommended to have one or more “medication changer” at each session.³ The nurse practitioner’s main role is to promote improved glycemic management through adjustments in patients’ insulin and oral diabetes medication regimens. The pharmacist focuses on cardiovascular risk reduction through management of aspirin therapy, blood pressure, cholesterol, and smoking cessation.

An observational, prospective study is underway comparing the clinical differences observed between patients previously enrolled in the multidisciplinary HIDM clinic and those enrolled in less resource-intensive diabetes SMAs. No published information could be found on the evaluation of SMAs in comparison to other quality-improvement strategies.

It is hypothesized that the Phoenix VA diabetes SMA program has reduced resources through

reductions in the required number of clinicians and clinic time to provide care. In the transition from the HIDM clinic to SMAs, the number of clinicians to operate the clinic has been reduced from five to three. Additionally, in a 3.5-hour clinic time, the HIDM team was able to manage 10 patients, whereas a diabetes SMA is able to treat 8–12 patients in a 2-hour period. A comparison of the clinics is shown in Tables 1 and 2.

A systematic review⁴ of 13 trials that evaluated the effects of SMAs on outcomes for patients with diabetes demonstrated lower A1C values associated with SMAs in comparison to usual care at 4–48 months of follow-up. SMAs demonstrated inconsistent effects on cholesterol and blood pressure control in comparison to usual care.⁴ It is unclear whether diabetes SMAs at the Phoenix VA will achieve clinical outcomes similar to those of the HIDM clinic or to previously estab-

lished and studied SMAs elsewhere. It is clear, however, that the less resource-intensive SMA model offers potential for innovative disease state management that is consistent with ADA’s recommendation² of a coordinated team of dedicated health care professionals working in an environment in which patient-centered, high-quality care is a priority.

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