



MOVE! Enhanced: A Virtual Multidisciplinary Weight and Diabetes Management Program for High-Risk Veterans. A Feasibility Pilot

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Quality Improvement Success Stories are published by the American Diabetes Association in collaboration with the American College of Physicians and the National Diabetes Education Program. This series is intended to highlight best practices and strategies from programs and clinics that have successfully improved the quality of care for people with diabetes or related conditions. Each article in the series is reviewed and follows a standard format developed by the editors of *Clinical Diabetes*. The following article describes a feasibility study assessing a multidisciplinary, virtual weight and diabetes management program aimed at high-risk veterans with obesity and diabetes in Milwaukee, WI.

Describe your practice setting and location.

The Clement J. Zablocki Veterans Affairs (VA) Medical Center delivers primary, secondary, and tertiary medical care in 166 acute operating beds and provides >600,000 visits annually through an extensive outpatient program. It is the largest VA facility in Wisconsin

and, as part of the VA Integrated Services Network 12 (VISN 12), it is designated as a referral base for the upper peninsula of Michigan and northern Illinois. Throughout the state, the medical center has community-based outpatient clinics in Appleton and Green Bay, serving 11 counties in the north central region; Union Grove, serving four counties in the southeastern region, and Cleveland, serving four counties in the east central region. These programs serve a veteran population of ~250,000 (1).

Describe the specific quality gap addressed through the initiative.

Obesity and diabetes disproportionately affect veterans, with estimated rates >41% and 22% respectively, increasing risks for complications and mortality (2,3). Moreover, social isolation resulting from the coronavirus disease 2019 (COVID-19) pandemic has affected physical and psychological well-being further, contributing to weight gain and worsened diabetes control (4). Despite available resources within the VA system (i.e., the MOVE! weight management program), high-risk people with diabetes and obesity still struggle to successfully achieve and sustain weight loss and improve glycemic control to reduce their risks of complications. Virtual and digital platforms outside of the VA system have shown promise in promoting weight loss and improving diabetes control (5–7).

The VA has long promoted clinical telemedicine to improve access to specialty care for veterans located in remote areas. Building on the existing robust telehealth infrastructure, the health system expanded its virtual care applications in response to increased needs during the COVID-19 pandemic. Given the higher rates of obesity and diabetes identified at our institution and the low rates of weight loss and A1C reduction observed in people with uncontrolled diabetes and obesity who had participated in the traditional MOVE! program, we designed a VA multidisciplinary virtual weight and

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diabetes management pilot program that aimed to achieve significant weight loss ($\geq 7\%$) and improve diabetes control ($\geq 1\%$ A1C reduction) in high-risk veterans with diabetes and obesity.

How did you identify this quality gap? In other words, where did you get your baseline data?

We identified a gap in the number of veterans with obesity ($\text{BMI} \geq 30 \text{ kg/m}^2$) and uncontrolled diabetes ($\text{A1C} \geq 8\%$) in our network. This information was obtained through a query of the local database (data warehouse) and MOVE! outcomes report data.

Summarize the initial data for your practice (before the improvement initiative).

Review of our local data revealed that 47% of our veterans had obesity ($\text{BMI} \geq 30 \text{ kg/m}^2$), and 24% had diabetes (Supplementary Table S1). Of those with diabetes, >60% had a $\text{BMI} \geq 30 \text{ kg/m}^2$, and 26% were considered to have uncontrolled diabetes ($\text{A1C} \geq 8\%$).

Supplementary Table S 2 shows data from the traditional MOVE! program from the past 4 years, where 875 veterans with diabetes were identified as participants, with an average follow-up of nine appointments. Of those, 270 patients (31%) had uncontrolled diabetes ($\text{A1C} \geq 8\%$).

When looking at the average weight and A1C change from the start until the completion of the program, we found an average weight loss of 1.6% and a 0.5% point A1C reduction. Of note, in the conventional MOVE! program in our institution, antiobesity or even antidiabetic medications with weight loss effects were rarely used in the past 4 years. The lack of prescribing of these medications likely was because these agents had been mostly restricted for nonformulary use by endocrinologists or diabetologists. In addition, there had not been any practice agreement between the Division of Endocrinology and the MOVE! Program to facilitate or staff an obesity clinic in our institution.

What was the time frame from initiation of your quality improvement (QI) initiative to its completion?

This was designed as a 12-month pilot program. The first patient was enrolled in May 2020, and the last patient was recruited in January 2021. At the time of this review, six of the 10 patients had either completed or were discharged early from the program, while four more remained, with discharge from the program planned for the last participant to occur in January 2022.

Describe your core QI team. Who served as project leader, and why was this person selected? Who else served on the team?

This was a multidisciplinary effort that included team members from pharmacy, food and nutrition, occupational therapy, the MOVE! Program, behavioral health, home telehealth, and the diabetes and endocrinology divisions. The project and team leader was a physician diabetologist who oversaw the design and implementation of the program. The design and execution of the interventions were carried out by the multidisciplinary team.

Describe the structural changes you made to your practice through this initiative.

Starting in August 2019, initial multidisciplinary meetings were held to discuss and evaluate needs and resources available to high-risk veterans with diabetes and obesity at the Milwaukee VA, VISN 12, and community care programs. A strengths, weaknesses, opportunities, and threats (SWOT) analysis and need assessment were completed. Based on the SWOT analysis and supporting data, a pilot proposal was discussed with members of local leadership. The pilot proposal was supported by different disciplines and departments, including primary care, medicine, surgery, pharmacy, food and nutrition, and mental health, at the Milwaukee VA and its affiliated clinics. Subsequently, multidisciplinary team members were identified and recruited. Brainstorming sessions were completed monthly to finalize workflow process and communication strategies among team members.

At the beginning of the COVID-19 pandemic, the original design of the pilot proposal pivoted from including face-to-face evaluations to virtual ones. Because of the negative effects of pandemic-related social isolation and ongoing patient needs, initiating the pilot became a priority. The team resumed meetings in a virtual format, and the entire workflow was adapted to a 100% virtual intervention. The first of 10 patients were recruited in May 2020. At the time of writing, the final participant was expected to finish in January 2022. Virtual huddles are held weekly, during which obstacles or progress for each patient are discussed to ensure continuity.

Describe the most important changes you made to your process of care delivery.

Supplementary Figure S1 shows the process flowchart. The 10 high-risk patients were recruited from the

MOVE! Program or diabetes clinic and met the following inclusion criteria:

- Age 18–75 years
- BMI >30 kg/m²
- Diagnosis of diabetes and use of high insulin doses (>1 unit/kg), concentrated insulin (any dose of U500 insulin), or on any dose of insulin but with uncontrolled diabetes (A1C $>8\%$)
- At least one of the following comorbid conditions: arterial hypertension, degenerative joint disease or chronic pain requiring opioids, nonalcoholic fatty liver disease or nonalcoholic steatohepatitis, obstructive sleep apnea, history cardiovascular disease (coronary artery disease, stroke, peripheral vascular disease, or congestive heart failure), or diabetic kidney disease (glomerular filtration rate <60 mL/min/1.73 m² or presence of microalbuminuria >30 mg/mL)

The program interventions were designed to offer comprehensive, evidence-based, patient-centered weight loss and diabetes management strategies to high-risk veterans with obesity and diabetes. A social worker from the mental health department reviewed charts to ensure that candidates were suitable for participation. The MOVE! Program coordinator ensured that potential participants met the inclusion criteria and contacted them to offer optional participation in the pilot. At that time, expectations of providers and patients were reviewed. Patients were recruited if they showed motivation to make changes and agreed to participate in the pilot program activities.

The foundational components of the program included dietary changes, increased physical activity, and medication management. These are described in more detail below. Glucose, diet, and physical activity were monitored using a glucose management platform (Glooko) approved and sponsored by the VA Office of Connected Care. Professionals from other specialties such as mental health, sleep medicine, or physical and rehabilitation medicine/pain management were engaged as needed.

Nutritional Component

The registered dietitian had an initial assessment with each participant during which they concentrated on facilitating a lower-carbohydrate diet. Carbohydrate awareness was encouraged, and a target of 90–135 g carbohydrates per day, divided mostly into three meals, was recommended. Patients were asked to enter food items in the Glooko app, which allows for estimation of

carbohydrate grams consumed. Follow-up visits took place every 4–8 weeks on average.

Physical Activity Component

An occupational therapist performed an initial evaluation with each participant during which functional capacity was determined and physical activity goals were established. Veterans were able to participate in virtual guided exercise sessions via the VA Video Connect (VVC) telehealth system at least once per week. One-on-one follow-up visits took place every 8–12 weeks on average. Some patients had Glooko-integrated activity trackers (e.g., a Fitbit or Apple Watch); the rest were asked to enter the duration and type of their physical activity directly into the Glooko app.

Medication Management

Pharmacological intervention was aimed at improving glycemic control while promoting weight loss and decreasing insulin requirements. Each participant underwent an initial evaluation performed by both the physician diabetologist and the clinical pharmacist. Subsequently, visits were alternated every 4–8 weeks as needed.

Glucose levels were determined either via continuous glucose monitoring (using a Dexcom G6 system) for individuals on multiple daily injection insulin regimen or having a history of hypoglycemia via fingerstick blood glucose monitoring with a glucose meter (Accu-Chek Guide Me) at home. Both devices were compatible with the Glooko platform, allowing team access to glucose data.

Depending on the individual, metformin, a sodium–glucose cotransporter 2 (SGLT2) inhibitor, and/or a glucagon-like peptide 1 (GLP-1) receptor agonist was prescribed in combination with insulin. Orlistat, a weight loss medication that inhibits fat absorption, was also used when appropriate. Given that the majority of participants had established or were at high risk for cardiovascular disease, other weight loss medications such as bupropion-naltrexone and phentermine-topiramate were not used during this pilot.

Laboratory tests, including A1C, C-peptide, a basic metabolic profile, a lipid profile, urinary microalbumin/creatinine ratio, and liver function (measured by AST and ALT), were obtained quarterly. Phlebotomy was performed at the closest VA laboratory or at the veteran's home to avoid unnecessary trips to the hospital at the height of the COVID-19 pandemic, when necessary.

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Participants also completed quality-of-life questionnaires every 90 days.

All clinical visits were offered virtually using the VVC system. Comprehensive health monitoring was performed weekly and remotely by the home telehealth team. This team of nurse clinicians was trained to assist in the management of chronic medical conditions and provide guidance to patients during certain urgent conditions such as hypoglycemia or hypotension. Home telehealth team nurses also served as an important channel of communication between participants and the pilot program team.

Summarize your final outcome data (at the end of the improvement initiative) and how they compared with your baseline data.

Supplementary Table S3 and Supplementary Figure S2 summarize results for each participant through the date of manuscript submission for this article. Between May 2020 and January 2021, 10 high-risk veterans with obesity and uncontrolled diabetes or on high insulin doses were enrolled. The mean age of these veterans was 67 years (range 57–75 years), and 90% were male.

By September 2021 after a mean duration of 9.9 months, participants showed an average weight loss of 26 lb (11.8 Kg), consistent with a 9.96% reduction in body weight. Glycemic control also improved, with a 1.2 percentage point decrease in mean A1C. Finally, insulin requirements were cut by more than half, with a mean reduction in total daily insulin dose of 54.2%.

Of the 10 participating veterans, three left the program prematurely. Veteran 2 opted for bariatric surgery almost 6 months after initiating the program. Veteran 4 was discharged after 9 months in the program because of nonresponsiveness and lack of participation in required activities. Veteran 6 requested early discharge at the 8-month mark because his goals had been met and he could not participate further in pilot program activities.

With regard to medications for diabetes or weight loss used during the pilot, metformin was started in veterans 3 and 8, the SGLT2 inhibitor empagliflozin was added in veterans 4, 5, 7, and 10. The GLP-1 receptor agonist semaglutide was used in veterans 6, 8, and 9, and the GLP-1 receptor agonist dulaglutide was used in veteran 7. Orlistat was used in veterans 3, 4, and 5. Of note, veteran 3 had a confirmed diagnosis of type 1 diabetes, precluding pharmacy approval of a GLP-1 receptor agonist or SGLT2 inhibitor; thus, metformin and orlistat

were the only medications added to his regimen. Nonetheless, at the completion of the 12 months, he exhibited a 37.6 lb weight loss consistent with a 14.4% reduction in body weight. In addition, he experienced a 0.4% decrease in A1C and a 58.25% reduction in daily insulin dose.

What are your next steps?

Our next steps will focus on expanding the program to include more veterans who could benefit from this multidisciplinary approach. Given the large number of veterans with obesity and uncontrolled diabetes, we believe that opening access to a virtual program that focuses on the pillars of nutrition, physical activity, and medication management will be beneficial and may potentially decrease risks of complications. With the support of the VA telehealth infrastructure and technology, direct communication with patients and remote monitoring of clinical parameters such as weight and glucose levels can be achieved safely and effectively.

For the veterans who completed participation in the pilot program, steps were taken to ensure continuity of care and appropriate follow-up on their progress. For example, the MOVE! Enhanced program's dietitian and pharmacist communicated directly with their counterparts on each participant's primary care team to discuss the strategies used in the pilot and areas that may require reinforcement. All participating veterans were immediately transferred to the traditional MOVE! Program, through which they continue to have access to the weekly virtual exercise sessions. Additionally, they were invited to join a newly created support group for MOVE! Program participants to benefit from continued peer support.

Based on the experience accumulated during this pilot, we have obtained leadership support to continue and expand the program to a larger number of high-risk veterans who will have access to effective multidisciplinary interventions delivered virtually. We plan to continue to evaluate these interventions, not only in terms of the clinical impact they may provide, but also in hopes of demonstrating their cost-effectiveness and resulting improvements in patient-reported outcomes.

What lessons did you learn through your QI process that you would like to share with others?

Key factors in the success of our program were its true multidisciplinary nature and the support of leadership

since its inception. We were fortunate to have engaged and motivated team members who transmitted that energy to our participants. Nevertheless, without the hard work of the participants themselves, we would not have been able to obtain the results we did. Ultimately, we strived to show veterans a healthier path for independently managing their weight and diabetes moving forward. We hope that, having now walked this path with their hands held, they will be able to continue to do so on their own.

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DUALITY OF INTEREST

All authors are employees of the U.S. Department of Veterans Affairs. The opinions expressed in this article are those of the authors and do not represent the views of the Department of Veterans Affairs or the U.S. government. No other potential conflicts of interest relevant to this article were reported.

AUTHOR CONTRIBUTIONS

C.E.M. and K.B. researched data and wrote the manuscript. J.H., J.T., A.F., A.H., and A.L.A. contributed to and reviewed/edited the manuscript. C.E.M. is the guarantor of

this work and, as such, had full access to all the data included and takes responsibility for the integrity of the data and the accuracy of the review.

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