

Primary Care Pharmacists' Role and Use of Technology in Diabetes Management in a Population Health Model within a Regional Health System

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Approximately 9.3% of the United States population (29.1 million people) has diabetes.¹ The Centers for Disease Control and Prevention estimate that an additional 86 million adults in the U.S. have prediabetes and that as many as one out of every three adults in the U.S. could have diabetes by 2050.¹

Diabetes is associated with significant rates of morbidity and mortality, leading to decreased quality of life and increased health care costs.¹ The cost of care for patients with diabetes is high and increasing. As of 2012, annual costs associated with diabetes care in the U.S. total about \$176 billion in direct medical costs and \$69 billion in lost productivity; this equates to about one out of every 10 health care dollars.^{1,2} Patients with diabetes-associated complications have further increased costs when compared to those without complications.²

Improving glycemic control in patients with diabetes has been shown to reduce their risk of developing diabetes-associated microvascular complications, such as nephropathy, neuropathy, and retinopathy.³ The American Diabetes

Association recommends that diabetes care be provided by a multidisciplinary medical team that includes pharmacists, as this type of model has been shown to result in improved glycemic control when compared to provider-only care.⁴ Diabetes care team models that incorporate pharmacists consistently demonstrate a number of benefits, including improved glycemic control, reduced hospitalizations and emergency department visits for hyperglycemia and for hypoglycemia, reduced health care costs, and improved patient satisfaction.⁵⁻⁹

Froedtert & the Medical College of Wisconsin (F&MCW) is composed of Froedtert Hospital, a 585-bed academic medical center in urban Milwaukee, four community hospitals, and more than 45 primary and specialty health centers and clinics in southeastern Wisconsin. Twenty F&MCW health centers are recognized as patient centered medical homes by the National Committee for Quality Assurance (NCQA). F&MCW primary care physicians work closely with specialist physicians, nurse practitioners, physician assistants, pharmacists, and other healthcare professionals to provide exceptional multidisciplinary team-based

care to patients.

Inception Health was created by F&MCW to solve key health care problems, develop new ideas, and scale those solutions across the health network through successful collaboration with innovative external companies. Inception Health is the hub for the F&MCW health network's digital health services. Through a close partnership with Inception Health, the primary care clinical pharmacists utilize technology to enhance disease state management through the use of digiceutical products Proteus Discover[®] and Glooko[®].

Evolution of Primary Care Pharmacists at F&MCW into Population Health Initial Pharmacist Involvement in Primary Care

Primary care pharmacists have been an integral part of care at F&MCW Health Centers since 2013. Models have varied based on clinic needs and preferences and have continued to evolve. In July 2014, a Patient-Centered Medical Home Pharmacist began working collaboratively with a diabetes-focused Advanced

Practice Nurse Practitioner at F&MCW Tosa Health Center. This pharmacist practiced under a Diabetes Management Collaborative Practice Agreement (CPA) with the F&MCW primary care physicians. This CPA allowed the pharmacist to independently assess patient progress towards diabetes-related goals, order and modify orders for medications and labs, and provide patient education regarding adherence to medications and lifestyle modifications. This model of care was developed with the primary purpose of increasing the quality of diabetes care at this clinic in a non-disruptive, financially sustainable way. A retrospective review of this co-management model in 2016 demonstrated an average change in A1c of -1.24% ($p=0.01$) compared to prescriber-only management during an average of 73 days of engagement with the pharmacist, as well as statistically significant lowering of fasting and average blood sugars compared to baseline ($p=0.003$ for fasting blood sugars, $p=0.001$ for average).¹⁰

In April 2016, a F&MCW system-wide Diabetes Management CPA was approved and signed based on the F&MCW Tosa Health Center CPA. This CPA was a key component to the growth of the pharmacist's role in primary care and diabetes management in the F&MCW system. With increased scope and autonomy, the primary care clinical pharmacists were able to more efficiently serve a larger patient population.

Ambulatory Diabetes Outreach Program

With data demonstrating the clinical benefits of the primary care pharmacist role in diabetes management along with physician feedback requesting additional resources within primary care, the Ambulatory Diabetes Outreach Program (ADOP) was approved by the F&MCW Ambulatory Quality subcommittee and officially started in August 2016. The primary purpose of ADOP was to help F&MCW Health Centers achieve the Wisconsin Collaborative for Healthcare Quality (WCHQ) diabetes bundle metrics for the managed care population. WCHQ publicly reports and brings meaning to performance measurement information that improves the quality and affordability of healthcare in Wisconsin, in turn improving the health of individuals and

communities.¹¹

The original ADOP team supported 19 clinics and was composed of five pharmacists and one certified diabetes educator (CDE) nurse. Each pharmacist supported a specific group of primary care clinics, whereas the CDE nurse was available to support patients at any of the clinics. As part of the Care Coordination department, the ADOP team also had access to a social worker and several care coordination nurses who were available to address barriers and provide patient care between follow-ups with the ADOP team. In addition to accepting referrals from primary care providers, the team utilized reports created from the electronic medical record (EMR) to identify patients within F&MCW's managed care population. Eligible patients were those with type 2 diabetes, an A1c of $\geq 9\%$, not using U-500 insulin, and who were not being actively managed by endocrinology. Outreach to these patients was performed initially via a letter introducing the program to patients and providing the assigned ADOP team member's contact information (Figure 1). The ADOP team member then provided an outreach call to each patient one to two weeks later. Upon the patient accepting participation in the program, management of the patient's diabetes was provided primarily via telephone outreach, with office visits as needed, in collaboration with the patient's primary care team until the patient achieved their diabetes-related goals. After meeting their diabetes-related goals while working with the ADOP team, patients returned to usual care with their primary care physicians.

As the ADOP team developed, healthcare reimbursement models have continued to evolve from fee-for-service to pay-for-performance. Medicare's quality reporting programs and payment model are being consolidated and streamlined into one merit-based incentive payment system (MIPS). This consolidation has provided an opportunity to improve the existing Medicare programs and is focused on improved performance in four areas: quality (making up 50% of score), costs (10%), advancing care information (25%), and clinical practice improvement activities (15%). Under MIPS, clinicians and health systems are able to choose six measures on which they will be evaluated. One of

TABLE 1. Growth of Ambulatory Diabetes Outreach Program (ADOP)

Year	Primary Care Clinical Pharmacist FTE
2014	1
2015	3
2016	5
Current state	7

FTE = Full Time Employee

the quality metrics F&MCW chose was Diabetes: Hemoglobin A1c under poor control ($>9\%$), which aligns with the focus of ADOP.¹²

As the team found success in improving patient outcomes and with more emphasis being placed on quality of care, additional pharmacists were hired to meet increased demands through program expansion. The increase in primary care pharmacists on the ADOP team enabled the expansion of outreach to all patients, irrespective of insurance status, significantly increasing the number of patients supported. Currently, each of the pharmacists is actively managing between 80-100 patients, along with continued identification and outreach to eligible patients.

Additionally, all pharmacists became embedded in their assigned primary care clinics throughout the F&MCW system, instead of some working from a central location. Having the pharmacists physically located in the clinics improves access for patients to have face-to-face pharmacist visits, enhances the collaboration with providers, and creates a stronger connection with the clinic-based care team.

Lastly, an important factor in the growth of the primary care clinical pharmacist team is having a population (patients with uncontrolled type 2 diabetes) to which the pharmacists are accountable. This has allowed for data analysis of this population to indicate clear value in quality improvement and justification for continued growth (Table 1).

Digiceutical Technology

Having a pharmacist embedded in primary care clinics has also provided an opportunity to identify patients that may benefit from two digiceutical technologies, Proteus Discover® and Glooko®.

Proteus Discover® is a digital medicine

program designed specifically to provide feedback for medication adherence and other health behaviors to both patients and providers.¹³ It consists of an ingestible sensor, an adhesive wearable sensor patch, a patient mobile app, and a provider Web portal. After being swallowed, the ingestible sensor is activated and sends a brief signal with a specific code that is detected by the patch. The patch also measures physical activity, rest, heart rate, and step count to provide objective lifestyle information. Data from each patch are transmitted to a smart device (i.e., smartphone or tablet) and then to the secure portal. Patients can visualize the data on their smart device via an app. The patient is also able to enter blood glucose and blood pressure data into the app, and the app prompts the patient to take their medication doses as scheduled. Providers can view summaries of the data for their patients on a Web portal. The ultimate goal of Proteus Discover[®] is to improve clinical outcomes through better patient self-care, enhanced patient-provider dialogue, and data-driven optimization of therapy to help patients reach treatment goals more quickly.¹³ By utilizing electronic health record reports, patients have been identified for Proteus outreach through the ADOP team if they meet one of two criteria:

1. A1c >7% on only oral antidiabetic medications or,
2. Hypertension with concomitant type 2 diabetes with last two ambulatory BPs >140/90 or average ambulatory BP >140/90 over the past six months.

Glooko[®] is a diabetes management healthcare tool that utilizes Bluetooth technology to support downloading of blood sugars from many different glucometers and continuous glucose monitors to a Web-based platform. This allows for more efficient, real-time assessment of individual patients' diabetes control and enables the ADOP team to make medication adjustments quickly between a patient's provider visits. The platform also has provided an avenue for patients to become more engaged in their care by allowing them to enter more specific data, including preprandial and postprandial blood sugars, when medication doses were missed or taken,

and eating habits. All patients enrolled in ADOP are eligible to sign up to use Glooko[®] while working with clinical pharmacists or certified diabetes educator on the ADOP team. Based on a cohort data review of patients enrolled in ADOP, those who used Glooko[®] demonstrated an average A1c lowering of 2.35% compared to 1.53% in those who did not use Glooko[®] (unpublished internal data).

Future Direction

Continued Evaluation of Effectiveness of Digiceutical Technologies

Because the use of Proteus Discover[®] is a recent addition to ADOP, clinical outcomes to evaluate the effectiveness of the intervention, along with patient and other healthcare provider perspectives regarding the technology, are important areas of future research. Additionally, both digiceutical technologies will soon be integrated into the EMR platform, allowing providers to order the tool for patients who may or may not qualify for ADOP. This will allow the digiceuticals to be available to a wider population to include patients with diabetes and A1cs <9% and improve efficiency in the use of the digiceutical platforms.

Focus on Additional Disease States

Improved outcomes when expanding the care team to include clinical pharmacists in primary care at F&MCW have resulted in a desire to involve them in hypertension management and to provide comprehensive medication reviews for patients with complex medication regimens. This expansion of services is expected to further increase pharmacists' value on the primary care team.

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FIGURE 1. ADOP Introduction and Outreach Letter

Dear XXX,

Managing diabetes can be a challenge, and sometimes you may need some extra help. You often cannot feel when your blood sugars are high and it is important to control your diabetes to avoid future health problems. You have been identified as being recommended for a FREE program for people with Type 2 Diabetes.

At Froedtert, we have a team of experts as part of the Ambulatory Diabetes Outreach Program (ADOP) who want to help you control your diabetes by working together with you and your primary care doctor, @PCP@. We understand that making changes can be hard. We will work with you to help manage your sugars through food choices, activity, and medications.

Working with an ADOP team member to manage your diabetes can be done over the phone at a time that is most convenient for you. It is a free service with a personalized approach to your care, working closely with your doctor and care team. Typically patients work with the ADOP team for 3-6 months AND as a part of this service, a tool called Glooko is available for free!

Glooko is a diabetes management program to help you better manage your blood sugar levels and receive support as needed from the ADOP Care Team.

Using Glooko you will be able to:

- Easily share data from your diabetes device(s)
- Quickly log carbs using our food database of 500,000+ foods and restaurant menus
- receive support from your ADOP Care Team as needed
- Set medication reminders...and more!

****There are 2 ways to get started with the ADOP team**:**

1. Call the pharmacist on your doctor's care team at 414-777-5279 OR
2. Follow instructions below to sign up for Glooko

If you are interested in signing up for Glooko, please follow the steps below:

1. On your computer or smart phone go to: join.glooko.com to claim your Welcome Kit.
2. Your unique activation code is the month, day and year of your birth along with the first two letters of your last name. For example 090386ta.
3. You will receive a shipping confirmation email to let you know your tracking information
4. Once you receive your Welcome Kit, follow the instructions in the box to sync your diabetes device(s) to Glooko and connect to your ADOP Care Team!
5. If you have any questions about Glooko setup, please contact the Glooko Support Team at 800-206-6601 and press 1, or email support@glooko.com."

We look forward to getting started together!

Sincerely,

XXX, Pharmacist
Phone: 414-777-5279

PCP
Froedtert *** Health Center