


Re-Entry of Retired Endocrinologists into Practice: Role of Telemedicine for Patients with Diabetes Mellitus in Rural, Financially Challenged, Underserved Areas

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***Corresponding author:** Richard J Santen, Professor Emeritus, Division of Endocrinology and Metabolism, University of Virginia Health Care System, Charlottesville, Virginia, USA

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Richard J Santen*

Division of Endocrinology and Metabolism, University of Virginia Health Care System, USA

Abstract

A large workforce gap in endocrinologists taking care of patients with diabetes mellitus exists and is particularly problematic in financially challenged, underserved, rural areas. As a partial solution, retired endocrinologists can be recruited back into the workforce to take care of these patients via telemedicine. This perspective describes the elements needed for a successful program based on the five year experience of the author. Required program components include a team approach, effective communication between endocrinologist and primary care provider and substantial clinic infrastructure. The experience with this approach demonstrated a significant reduction of hemoglobin A1C in patients completing the program. Problems with “phone tag” and inability of patients to lose weight have been identified as problems. Use of scheduled telephone call appointments and meal replacements may provide means of solving these problems. This perspective presents the concept that retired endocrinologists, using telemedicine, can be a key resource for improved care of patients with diabetes living in underserved areas.

Keywords: Endocrinologists; Telemedicine; Diabetes mellitus; Financially challenged; Underserved areas; Hemoglobin

Abbreviations: PCPs: Primary Care Providers; FQCHC: Federally Qualified Community Health Centers; CDCEs: Certified Diabetes Care and Education Specialists

Introduction

A large workforce gap exists in the number of endocrinologist available to take care of patients with diabetes mellitus in the United States [1,2]. The workforce gap is particularly a problem in financially challenged, underserved, rural areas where the number of specialists is insufficient to meet needs [3-7]. Several other problems also complicate delivery of care in these areas. Patients have difficulty with access to medical facilities due to lack of transportation and many are several miles distant from the patient’s home. Because existing job openings are limited in these areas and unemployment high, patients do not have the finances to pay for their medical care or medical insurance. Lack of education is common and compromises the patient’s ability to self-manage their diabetes [3]. Taken together, these problems result in poor control of patients with diabetes living in rural, underserved, financially challenged areas and a marked increase in diabetic complications.

New Program

One potential solution to the workforce gap would be an intensive educational and self-management program for patients with diabetes utilizing telemedicine. We postulated that a six month, telemedicine-based program would provide the ability for patients, after completion of the program, to manage their diabetes with much reduced input from endocrinologists and their Primary Care Providers (PCPs) [8]. This program would involve

intensive glucose management strategies including initiation of additional glucose lowering agents, instruction in frequent glucose testing, nutritional and metabolic education, and introduction of programs for weight reduction and exercise. The referring PCPs would be reassured to know that the patients would be returned to their personal care after six months and not continually cared for by the endocrinologist.

Personal Experience

As the author of this perspective, I have had five years' experience in the initiation and evaluation of such a program and the modification of components after identification of specific problems. When preparing for my retirement five years ago, I reasoned that my long standing experience in taking care of patients with diabetes might be applied to the care of patients during a phased retirement. It would be possible to spend 5 to 10 hours per week evaluating new patients with diabetes via telemedicine and then communicating with them over the telephone to manage their glucose levels [9]. Since many retired endocrinologists have retirement pensions and savings that allow a substantial monthly income, the amount of fees obtained by seeing patients is not a major motivating issue. For retired endocrinologists who are looking to continue seeing patients but at a much reduced level, telemedicine provides a means to do this. In addition, many retired physicians (myself included) would like to travel nationally or internationally. With the use of internet and telephone calls, it is possible to continue to take care of patients from anywhere in the world in which adequate Internet access is available. The next sections of this perspective will now review the program developed and my experience with it.

Description of Program and Specific Processes

Five different clinics in rural Virginia, each of which have multiple PCPs, are involved in the program. The average income in the areas served by these clinics is substantially less than the average for all of Virginia (i.e. \$45,000 vs \$71,000). These clinics are Federally Qualified Community Health Centers (FQCHC) in which the Federal Government provides funding for the maintenance of the facility, the providers, and all of the infrastructure. The involvement of FQCHCs is quite important because it provides the resources necessary for my intensive interactions with the clinics and clinic staff. FQCHCs provide a sliding scale method of payment for the patient. This is particularly important for indigent patients. The specific processes are complex and described briefly here. The PCP decides to send a referral for evaluation of their patients with uncontrolled diabetes and detailed records are emailed in a PDF format to the endocrinologist period. The records include a detailed history, physical exam, summary of all imaging studies, and laboratory data. Generally the physical exam is very detailed and sufficient for me to assess the patient without performing a physical examination myself. The clinic staff establishes an appointment time and date. The patient then comes into the clinic where up-to-date telemedicine equipment is available. I then spend approximately 45 minutes in obtaining a detailed history, reviewing the physical

exam, laboratory data, and imaging. Following this I make specific recommendations and set a specific time and day for patients to call me once each week. Patients are instructed to measure their blood glucose levels four times per day. A detailed consultation note is then dictated, converted into a PDF, and e-mailed back to the clinic. Once recommendations are made, the Certified Diabetes Care and Education Specialists (CDCESs) in the clinic discuss this information with the PCP and ensure implementation of all recommendations including ordering of new medications and laboratory data. Importantly, the CDCESs are an integral part of the process. They take the initial part of the medical history involving demographic and life style data, review medications information jointly with the endocrinologist using a standardized form and obtain the vital signs.

After the initial consultation, weekly telephone calls to the Endocrinologist are made which allow rapid changes in medications based on glucose logs. The weekly phone call generally requires 10 minutes to record patient blood sugars and to make recommendations. In a small number of individuals that had Internet, we utilized either DEXCOM G6 or Libre II to communicate glucose results. Patients rapidly appreciate the improvement of their glucose levels during weekly calls as assessed by these logs. Requests are made to obtain repeated hemoglobin A1C levels at appropriate intervals which are obtained in the clinic as ordered by the CDCES or PCP. When new medications are recommended, the CDCES transmits this information to the PCP and facilitates per-authorization when needed.

Program Statistics

Over 5 years, 268 requests for evaluation have been requested by the PCPs. Approximately 30 percent of patients have not been motivated and have not followed up by telephone and have been discharged prematurely from care. Fifty patients are currently being followed and have not completed the program. Another 139 patients have completed the program with an average reduction of hemoglobin A-1C from $10.3 \pm 1.94\%$ to $7.8 \pm 1.51\%$ ($p < 0.0001$). After completion, these patients were then returned to the care of their providers and were followed up periodically by clinic personnel to evaluate recidivism. Surprisingly the average hemoglobin A1C did not statistically differ over 6 to 18 months of follow-up after discharge from the program. However, some patients have had an improvement during the follow-up and others deterioration but none back to their baseline hemoglobin A1C. A manuscript has been submitted to describe the results of the program in detail including the number and types of medications used, patient weights, and A1C changes.

Lessons Learned

The first lesson is that taking care of patients with diabetes is a team effort requiring the participation of the referring PCP; CDCESs; nutrition experts, interpreters for patients that do not speak English, as well as clinic support personnel for communications and for obtaining blood for laboratory results. One individual in the clinics, the CDCES, needs to be responsible for coordinating care and has

several responsibilities: communications between endocrinologist and PCP, arranging for new prescriptions to be authorized and filled, forwarding laboratory data to the endocrinologist, and serving as the person to handle patient phone calls. Electronic medical records need to be shared between the endocrinologist and the clinic. The use of dictating systems, either commercially, or using a dragon based system by the endocrinologist allows detailed records to be compiled. A scanner then can be used to convert the medical records into PDF files which then can be transmitted electronically via email to the various clinics if the electronic medical records cannot be shared. The second lesson is that telemedicine can be a key component to the care of patients living in financially challenged, rural, medically underserved areas. The third lesson, is that for trained endocrinologists who are retired, it is a very rewarding experience to be able to continually utilize one's expertise with minimization of the time and effort needed to help patients, an element enabled by the team members.

Problems Identified and Solutions Implemented

Phone tag

In the initial implementation of this program, the patients who were called only infrequently answered and voicemails were not returned. It was very labor-intensive to try to communicate with patients by repeated phone calls. The solution was to instruct patients that they had a specific telephone call appointment time once each week and that they were to call me. They were instructed that if they missed three telephone calls I would assume that they were not motivated to continue the project and I would then discharge them from my care. This has worked very effectively and allowed me to obtain the patients records and review insulin doses at the time of the call, resulting in limiting the call duration.

Lack of weight loss

Another problem was the inability of patients to meet weight reduction goals established during the initial consultation which usually was in the range of 10-20 pounds over 2 to 6 months. To address this problem, we are now using meal replacements (Nutrisystem D) in selected patients to attempt better methods of weight reduction, a step previously pioneered by others [10-12].

Future goals

I envision that a template can be implemented for retired endocrinologists to re-enter practice and care for patients with diabetes in underserved areas via telemedicine. These endocrinologists need to maintain their medical licenses and also malpractice insurance to do this. In my investigations, malpractice insurance need for this program costs about \$2000 per year including the tail. These costs can be reimbursed by the billing for new patients. Overall the retired endocrinologist does not gain financially from this program but must look at this as an altruistic

venture. A future goal is to recruit retired endocrinologists. Currently I have obtained the agreement of two very experienced physicians in the treatment of diabetes who are willing to work on a similarly designed project.

Conclusion

The program described appears to be feasible and clearly has resulted in improved control of glucose levels. The degree of recidivism after completing the program appears is not substantial but longer term follow up is needed. It would appear that this program could be implemented on a larger scale in the future.

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