



Intensive Diabetes Self Management in Rural Areas using Telehealth & Technology

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LOCATION/AFFILIATION

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APP(S), DEVICE(S), OR PLATFORM(S) USED

- HIPAA Compliant telehealth platform: Cisco Jabber
- Cloud-based diabetes management system: Glytec
- Cloud-based Insulin Management System: Glucomander-OutpatientR
- Collection of blood glucose data: Telcare glucose meter

PROGRAM DESCRIPTION

Patients with diabetes who live in rural, underserved areas lack access to the resources needed to enable them to achieve even adequate levels of glucose control, including lack of access to endocrinologists, health professionals specializing in diabetes education and the internet. Our program used telemedicine to connect an endocrinologist from a tertiary health care system as the [distant site](#), a FQHC with a Certified Diabetes Educator (CDE) as the [originating site](#) and the patient who engaged with both the endocrinologist and CDE from the clinic site. The HIPAA compliant video conferencing platform, Jabber, was used to directly connect to the clinic site as internet access at the patients' homes in this area are unreliable. We developed an intensive, technology-driven six-month, self-management program which was designed to teach the patient to manage their own diabetes with reduced provider input.

For glucose monitoring, we used the Telcare glucose meter, a cloud-based glucose monitoring system which was able to provide near real-time glucose results in the cloud. If a patient did not have internet at home, blood glucose data would be stored and forwarded to the cloud when the patient drove to an area with internet. These data were provided to the endocrinologists for review and sent to the patient, either on the display of the patient's glucose meter or via a mobile text message.

The endocrinologist worked directly with the patient via telemedicine visits to evaluate and manage patient's medications, blood glucose and ability to comply with medical regime. The endocrinologist communicated directly with a CDE from the patient's rural clinic to support continuity of care. The CDE worked directly with the patient to support the endocrinologist's recommendations, medication changes and to provide self-management support and education. The key to this approach was frequent patient contact enabled by telehealth technology and store and forward blood glucose information, as well as formal mechanisms for follow-up.

The model of care uses retired endocrinologists to oversee the intensive self-management program. Using telemedicine, retired endocrinologists are able to manage these patients from home. Not only is this model convenient to the retired endocrinologist but more importantly, it provides much needed access to specialists that rural areas lack. Linking the retired endocrinologist to the patient's clinic allows for continuity of care. While the originating site used was a FQHC that had a CDE, our organization has also supported rural health clinics that used nurses or other, available health professionals; their role being to support continuity of care.

The results have been outstanding, to date. We have had 102 referrals. The initial HbA1c was 10.3 ± 1.88 . After the program, the average HbA1c was 8.05 ± 1.25 ($p < .001$). The median number of endocrinology calls per patient was six.

To enhance the program in the future, we will incorporate the glucomander-outpatientR management system to provide algorithm based recommendations for insulin dosing. This system, developed by Glytec, Inc is linked on a dashboard with Telcare.