Diabetes Wearable Pilot: An Analysis of Remote Technology Effectiveness on the Treatment of Type 2 Diabetes

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Purpose

The purpose of this practicum was to acquire experience developing a health promotion program aimed at providing patients with resources needed to better manage Type 2 Diabetes and the many complications associated with the disease.

- Core competency: Develop and evaluate social and behavioral interventions, especially through community participatory research in diverse communities.
- Activity: Assisted in developing a program that identified behavioral barriers negatively influencing Type 2 Diabetes management. With clinical assistance from nurse case managers, specific action plans were implemented to combat these behavioral barriers for eligible ACO patients in Marietta, Hiram and Acworth, Ga.

- HPMB 1: Identify basic theories, concepts and models from a range of social and behavioral disciplines that are used in public health research and practice.
- Activity: Provided recommendations to the pilot team during development for the program to resemble the Trans-theoretical Model. The trans-theoretical model (TTM) is a forward and backward progression model illustrating stages a person goes through while changing behaviors. Because each patient would progress through the model at different rates, it was believed the pilot’s framework would benefit best from this theory as it would make the behavioral changes appear more attainable to the patients.

- HPMB 5: Differentiate among goals, measurable objectives, related activities, and expected outcomes for a public health program.
- Activity: Assisted in patient goal development, and documented pre-pilot health parameter (Hemoglobin A1C, height, weight, BMI, cholesterol) to compare and determine effectiveness at the conclusion of the program.

Background

Type 2 Diabetes is a disease in which the body suffers from insulin resistance, or the insufficient usage of insulin produced in the pancreas. The pancreas, also responsible for assisting in digestion and regulating blood glucose, recognizes this insufficient use of insulin and produces additional insulin to compensate for the deficiency. Over time, the pancreas become unable to continue this exhaustive work. This causes blood glucose to accumulate in the bloodstream instead of depositing in cells. As a result, individuals typically are prescribed medication to assist the pancreas with regulating glucose levels.

Since its creation in 2000, WellStar’s Diabetes Education Center has seen a 73% reduction in hospital admissions, and a 55% reduction in emergency department visits related to diabetes complications. It is projected for this pilot to assist in improving these statistics while continually decreasing the quantity of high E.D. utilizers and excessive healthcare spending.

Methods and Materials

As an intern, I was responsible for the following tasks:

- Completed wearable pilot background research to assist in program development.
- Completed and submitted various documents to compliance outlining program specific details and patients and physicians requirements.
- Assisted in filtering WellStar patient population for those that fit the pilot inclusion criteria.
- Completed initial patient outreach: Patients that fit inclusion criteria received a mailed letter describing the program and benefits as well as an electronic notification via their myChart patient portal.
- Implemented physician forms into WellStar EMR, EPIC
- Conducted patient education on iHealth technology
- Completed chart documentation for all patient encounters

Figure 1: Percentage of Adults 18 Years of Age and Older who have Diabetes, U.S. and Georgia, 2004-2013

Figure 2: Graphical representation of diabetic prevalence for adults over 18 years of age or older in Georgia between 2004-2013. This graph illustrates the importance of developing interventions aimed at improving diabetes management in Georgia.

Figure 3: Eligible patients were provided with an iHealth glucometer, iHealth activity tracker (monitoring steps/daily), Health scale (measuring weight and body fat %), and all necessary accessories (lancets, test strips, and charging devices) at no cost.

Figure 4: Baseline Hemoglobin A1C Values for Eligible Patients

Future Directions

Based on an agree between the Department of Public Health and the Center of Disease Control and Prevention in July of 2013 – FOA- DP13-230: a collaborative effort has been made to prevent and reduce the risks factors associated with childhood and adult obesity and diabetes. Of the progressive steps being made, the following are promotional efforts directly related to this pilot and outline a consistent workflow for years to come:

- Promote awareness and screening for pre-diabetes among people at high risk of Type 2 Diabetes.
- Provide information to insurers and health systems regarding the return on investment for diabetic control initiatives.
- Promote participation in the Diabetes Prevention Program for people with risk factors for diabetes or pre-diabetes.
- Support quality improvement initiatives to improve A1C control and reporting of A1C control by healthcare providers.

If this pilot proves to be an effective mean of disease management, other areas of healthcare may look toward remotely monitoring patients and healthcare outcomes in the future.

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References