REMOTE MONITORING AND MANAGEMENT OF RURAL DIABETIC PATIENTS USING A WEB-BASED MEDICATION ADHERENCE/ePRO MONITORING DEVICE

Underserved Diabetes Population – St. Vincent Healthcare, Billings, Montana (Study conducted during 2005)

By; Bonne Farberow, RN, CCRA, CCRP, Vice President, Clinical Care Experts Project Director, Division of Cardiology Heart Failure/Transplant, University of Pennsylvania

Type 2 Diabetes Mellitus (DM) has become an increased health care and economic burden in the United States with increased cases of diagnosed children, adolescents and young adults with Type 2 DM. Co-morbid conditions from uncontrolled DM can cause significant cardiovascular disease (CVD) both micro and macrovascular, increased hospitalizations, surgical procedures, and decreased quality of life.

Maintenance of near-normal blood glucose levels and HbA1c <7.0, as per American Diabetic Association (ADA) guidelines, is the number one priority for people with type 2 DM to prevent diabetic micro and macrovascular complications, skin and soft tissue infections, retinal and kidney disease, lower extremity ulcerations, and amputations. Maintenance of near normal to below normal blood pressure readings (<130/85) is extremely important; due to the fact that hypertension-related cardiovascular disease is a frequent cause of additional co-morbid incidents and disease processes, emergency room and hospital visits. The intensity of provider knowledge, system resources, and patient self-management required to implement this regimen is a major challenge.

This study used a web-based medication adherence and ePRO monitoring device in rural diabetic patients to facilitate the patient's adherence with diabetes self-management regimens on a daily and more consistent basis. Results evidenced the accomplishment of the following objectives: 1) Used the Web-based monitoring system to improve clinical outcomes through monitoring of remote, rural patients. 2) Demonstrated that individualized monitoring and patient education based on the patient's daily status may achieve more controlled blood glucose 3) Collected real-time data on patient health status, medication usage, blood pressure, and glucose levels 4) Demonstrated ease-of-use of the Web-based monitoring system 5) Demonstrated physician and patient acceptance of this method. 6). Demonstrated that novel pharmaceutical packaging of the Web-based monitoring device, including shipment of pre-packaged trays to the clinical and/or patient sites, facilitated the remote monitoring and management of chronically ill patients. 7) Data analysis demonstrated that average medication adherence rates increased from a baseline of 40% to over 92%. 8) Data analysis demonstrated that HbA1c levels dropped an average of 18.7% after 3 months of patient use ($p<.002$). 9) Medication adherence and patient blood glucose levels were communicated to the healthcare provider on a regular basis.