

## TELEHEALTH PROJECT SUMMARY TEMPLATE

Please provide information on all major projects in the last ten years (1998-2008) and any planned future projects

SUMMARY WRITER: **Sven-Erik Bursell**

PROJECT NAME: **Diabetes Care and Treatment Project**

ORGANIZATION/AGENCY (and primary contact): **Telehealth Research Institute, John A. Burns School of Medicine, University of Hawaii**

FUNDING (source and amount): **Department of Defense (\$50M), Indian Health Service (\$2.5M), Robert Wood Johnson Foundation (\$300,000)**

START UP FUNDS:

REIMBURSEMENT (submitted/not submitted): **Eye Care program can use CPT 92250 for eye imaging. Reimbursement for care management is pending but not submitted**

DURATION (start time and date): **October 1, 1998**

PURPOSE/INTENT (100 words maximum):

**Provide web-based interactive care management and care coordination using telecommunications infrastructure for diabetes health care services including remote surveillance for diabetic retinopathy. The application is an open source software tool for health care delivery based on the Wagner Chronic Care model. The eye care module ensures that all diabetic patients receive appropriate eye care regardless of geographic or cultural barriers. The diabetes care module aggregates medical information from a variety of sources such as the electronic health record, laboratory systems, and the patient home and presents that data in a single dashboard view facilitating face to face and remote encounters.**

MAJOR CRITICAL ACCOMPLISHMENTS:

**Development of a Telehealth retinal assessment application that increases access of people with diabetes to appropriate medical eye care. This is achieved using low light level sensitive video technology and imaging systems that can image the retina without requiring pharmacologic dilation of the pupil. The results from this research and development project demonstrated that the system provided diagnoses of diabetic retinopathy that were equivalent to those obtained through dilate eye stereo retinal 35mm photography and to dilated eye examination performed by retinal specialists. Analysis also showed that the system cost less than traditional eye care and saved more sight. In a large retrospective study results also showed that patients who underwent this examination were more compliant to subsequent standard eye care, were more compliant to subsequent diabetes clinic visits and showed lower A1c and lipid levels than patients who had not undergone the teleretinal surveillance intervention.**

**Use of the diabetes care management program has also shown benefit with respect to improvement in A1c, lipid, and adherence to regular foot and eye examinations for patients with diabetes. Additionally, results from this study also showed a significant reduction in patient stress associated with dealing with diabetes as measured using the PAIDS tool.**

**The eye care program is now deployed in over 60 sites throughout the Indian Health Service. The results from this development effort also formed the basis for the VA National Teleretinal Screening program which was based on the model developed out of the core research and development effort.**

CRITICAL SUCCESS FACTORS:

**For the eye care module the critical success factor was the clinical validation with respect to diagnostic accuracy.**

**Other factors are the additional training the retinal imager specialists receive in basic diabetes self management that can be conveyed to the patient at the time of the imaging. We have found that this is a very powerful teaching moment as patient is able to see their own eye up on the monitor screen.**

**For the diabetes care management a critical success factor was engaging users in a user centered design process for the application.**

CRITICAL BARRIERS (overcome or not):

**Perception by ophthalmologists that this program would be taking patients away from them—have been able to show that in fact they will increase the number of patients that they see and the number of procedures that they will perform.**

**Need to establish a credible quality assurance program with appropriate population and organization reporting with respect to performance**

**Need to bridge the health care connection between ophthalmology and internal medicine**

MAJOR LESSON LEARNED:

**Human factor evaluations are essential**

**Include all stakeholders in the development process**

CURRENT STATUS (active, planned, dormant, completed, other?):

**Program is active with 4 participating clinics in Hawaii**

PARTNERING ORGANIZATIONS:

**Department of Defense, Veteran Health Affairs, Indian Health Service and Joslin Diabetes Center**

IS THERE A CLINICAL CHAMPION OR A COMMITTEE OVERSEEING THE TELEMEDICINE PROGRAM?

**There are a number of clinical champions associated with this project**

TECHNOLOGY USED:

**Eye Care program:**

**Topcon Non-mydratic retinal fundus camera with a low light level sensitive digital video camera.**

**Industry standard PACS infrastructure**

**DICOM and HL-7 compliance**

**VPN connectivity and security for retinal image transmission to evaluation centers.**

**Diabetese Care Platform**

**Industry Standard web browser technology,**

**Oracle data base**

**HIPAA compliance**

**Open Source software to facilitate interoperability and collaboration (Currently interfaced to VA VistA, Dod, AHLTA, and HIS RPMS EHRs, as well as to a number of commercially available HER systems)**

**Java software development environment, also use .NET and Visual Basic languages.**