



TELEOPHTHALMOLOGY

American Indian Country

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Rural populations and American Indians in particular experience various access barriers to health care services. These include lack of transportation, distance, and lack of comfort in dealing with unfamiliar urban environments. The teleophthalmology project was designed to address some of these barriers through providing access to diabetes-related ophthalmology specialty care specifically diabetic retinopathy. In some cases the clinic was at least four hours one way from an ophthalmologist. Teleophthalmology allows patients to go to their own familiar local health clinic and still have access to services required to assure better outcomes.

In the spring of 2001 The California Telemedicine and eHealth Center (CTEC), through a grant from The California Endowment, provided funding to set up and support the implementation of Teleophthalmology utilizing store-and-forward telemedicine in 13 Indian Health Clinics located in rural areas throughout the state. The primary objective was to double the percentage of Indian diabetics receiving annual eye care in these remote areas. CTEC worked with a group of organizations to develop the program including the Indian Health Service California Area Office and the California Rural Indian Health Board to assist with implementation; the Los Angeles Eye Institute at Drew University and the Advanced BioTelecommunications and Bioinformatics Center at the University of Southern California to provide quality control, and Dennis Rose & Associates to provide evaluation services.

The first phase of the project included the deployment of the Teleophthalmology screening equipment, fine tuning the software needed to send images, and hands-on usage training. The screening process included capturing an image of the retina (teleophthalmology screen), and sending this image via the internet to an ophthalmologist, for interpretation. Over a two-year period successful diabetic retinopathy screening



A Specialty Camera captures high resolution images of the retina. These images are sent to an Ophthalmologist via the Internet for interpretation.

programs were operational in the 13 Indian Health clinics across the state. In the first year over 500 retinal screens were accomplished, with 34 separate pathologies reported as either indicated or suspected, including glaucoma and macular degeneration.

The initial investment for each participating clinic was about \$37,000, including equipment and training. The annual fixed cost for training and technical support was about \$1,580 per year. The additional cost per screening, including capture time and read time, was about \$48 (the total cost per screen is affected by volume,

with 1,000 screens per year costing about \$50 per screen and 100 screens per year costing about \$100 per screen).

In evaluating project results, the following recommendations were developed for improvement of the service:

- Increase screening rates by enhanced outreach efforts
- Target efforts on follow up with patients at risk
- Avoid replacing full eye exams with screens
- Assure images are readable while patient is still present
- Provide ongoing training to address staff turnover

In California, store and forward telemedicine applications are not reimbursed by Medicaid. Each

clinic had to reimburse the specialist service out of their regular clinic visit payment. A change in this policy will be very helpful for sustainability but so far both Medicaid and Medicare continue to lag behind technology and standard practice.

It is challenging to measure all the benefits of this program to the population served. Clearly, when the lack of access to specialty care, and diabetic retinopathy in particular, in these remote areas are considered, public health resources are saved through the reduction of the incidence of blindness. Many of the participating clinics have now embraced telemedicine and are ready to take the next step to provide other needed specialty services including mental health. The California Telemedicine and eHealth Center is hopeful that it will

be successful in obtaining grant support to assist these critical eHealth efforts.



Road leading up to one of the rural and remote Indian Health Clinic sites in Northern California.