VHA TELEMEDICINE

THE TELEMEDICINE NEWS

Another First for the Department of Veterans Affairs

A Message from Adam W. Darkins, M.D.
Acting Chief Consultant, VHA Telemedicine

On Thursday, June 6th 2002 we held the 3rd Annual V H A Telemedicine Meeting. We had 40 attendees physically present at the EES facility in Long Beach and others viewing remotely. The meeting was available "live" by satellite simulcast to 200 VA Medical Centers and onto 30,000 desktop PC's in VISNs 5, 9, 11, 12, 14, 21, 22. State-of-the-art telemedicine training and education was delivered "virtually" to front-line clinicians and managers in the workplace using the VA-owned satellite television network, aptly named the Knowledge Network (VAKN). A review of the meeting is in the July issue of *U.S. Medicine.*

Craig Davis and Ann Margaret Howard from EES worked unstintingly with an incredibly tight deadline to deliver the live video feed over the satellite on June 6th. Our VHA telemedicine meeting was a first. Content had not been multicast over a network on such a large scale before, and the 7-hour program went out without a single technical glitch. Using VAKN gave us a glimpse of how content distribution over large IT networks is set to transform health care and other industries in the future. VAKN is a fully digital satellite broadcast network that utilizes a combination of MPEG-1, 2 and 4 data streams. Next year VAKN will be able to deliver live video content directly to 200,000 desktops in VHA. The VAKN satellite network provides unidirectional transmission of IP data to every VA Medical

Capitol Hill Telemedicine/Telehealth Educational Sessions
John Peters, MS

The 'Steering Committee on Telehealth and Healthcare Informatics' was created in 1993 to inform interested members of Congress and their staffers about issues related to telemedicine and telehealth. The steering committee's current honorary co-chairs are Senator Kent Conrad (D-ND); Senator Michael Crapo (R-ID); Representative Earl Hilliard (D-AL); and Representative Ernie Fletcher (R-KY).

For 2002, the steering committee has arranged for 10 lunchtime presentations and 1 all-day technology demonstration fair. All presentations are open

Inside this issue:

ATA 2003 Orlando, FL Apr 27-30

Telemedicine Trailblazer:
Mary G. Lawrence, MD, MPH
Sandra K. Schmunk, MA

Providing eye care for patients with diabetes is a big part of Dr. Mary Gilbert Lawrence's life. In fact, she began to notice that it was consuming more and more of her workday at the Minneapolis VAMC where she is Associate Chief of Ophthalmology. The reason for this is that 18% of veterans, as opposed to 6% of the general public, are afflicted with the diabetes. Of greater concern to her, however, was that although one of the clinical standards in the care of diabetics is an annual retinal examination to look for retinopathy, far too many veterans were not being screened. Retinopathy, a serious complication of diabetes, is the leading cause of blindness age 17-65 in the United States. It is also treatable, when detected in time.

Dr. Lawrence knew that a major contributing factor to poor compliance with the annual eye examination standard is limited access to eye care. She became determined to overcome this barrier to care and decided that utilizing telemedicine was a logical approach. She set out to design a program employing telemedicine that would provide screening to the veteran with diabetes at his or her local primary care clinic. Thus began the development of her Diabetic Retinopathy Surveillance Program (see article in this edition). After a successful trial, Dr. Lawrence is expanding the program to a second site, with the hope of eventually providing this service to the entire network.

Born in Austin, Texas, Dr. Lawrence spent her high school years in Madison, Wisconsin, where her parents were both professors at the medical school of the University of Wisconsin. She received her BA in chemistry from Mt. Holyoke College in Massachusetts, and her MD from Jefferson Medical College in Philadelphia. Following an internship in pediatrics at the University of Colorado, she completed an ophthalmology residency at Wills Eye Hospital in Philadelphia.

After her residency, Dr. Lawrence completed a year of glaucoma training with Dr. Thomas Richardson at the Massachusetts Eye and Ear Infirmary. She spent two years in private practice in the Boston area before joining the full-time faculty at Harvard Medical School in 1990 as Director of the Cataract Consultation/ General Eye Service at the Massachusetts Eye and Ear Infirmary. While at Harvard she received the Residents' Teacher of the Year Award and the Dean's Commendation for her teaching efforts. While serving as the Director of Public Service on the Executive Board of the Massachusetts Society of Eye Physicians and Surgeons, Dr. Lawrence developed and managed a statewide annual public eye screening in Massachusetts.

In 1994, she was awarded a Clinical Epidemiology Fellowship at Yale University School of Medicine as a Robert Wood Johnson Clinical Scholar under the supervision of Drs. Alvan Feinstein and Ralph Horwitz. She also received her M.P.H. from the Yale School of Medicine (1998). Following the fellowship, Dr. Lawrence became the Assistant Chief of Service in the Department of Ophthalmology at the Manhattan Eye, Ear, and Throat Hospital in New York City.

Dr. Lawrence joined the Minneapolis VA Medical Center as an ophthalmologist in 1997 when she also joined the faculty of the Ophthalmology Department of the Medical School of the University of Minnesota as an Associate Professor. In 1999, she became the Associate Chief of Ophthalmology at the Minneapolis VA. In addition to her clinical and administrative duties at the VA, she is also the Director of the Visual Rehabilitation Center at the University of Minnesota.

Dr. Lawrence's clinical work includes diabetic retinopathy screening, visual rehabilitation, and glaucoma, as well as cataract surgery. Her research interests include assessing the outcomes of ophthalmological interventions, applying telemedicine technology to detect eye disease in populations at risk, and measuring the impact of eye disease on quality of life. She has held leadership positions on state and national committees for several ophthalmology societies and has consistently presented her research at national meetings and in peer reviewed journals. In addition to her expertise in patient care and administration, Dr. Mary Lawrence is a superb instructor, and has lectured in such diverse locations as China, Kenya, Nepal, and throughout the United States.

As is apparent, Dr. Lawrence is a dedicated and accomplished clinician who applied technology to solve a problem. Her initiation and innovation have made a notable impact with the Diabetic Retinopathy Screening Program. Please read the article to follow for more details about the evolution, implementation, and outcomes of this trailblazer's telemedicine program.

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Another First for the Department of Veterans Affairs

A Message from Adam W. Darkins, M.D.
Acting Chief Consultant, VHA Telemedicine

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Center, outpatient clinic and community based outpatient clinic throughout the USA and Puerto Rico. This Content Distribution Network (CDN) uses IP multicast technology that "pushes out" content over the VAKN Satellite System directly to VISN and Medical Center networks. Digital files are transmitted and also stored for later asynchronous access. Our June 2002 meeting will soon be available on demand on VAKN via digital archive.

Videotaped material was also broadcast and complemented our June meeting. It was produced by Bob Lane from EES in Salt Lake City and Dave Gratz from Medical Media in Bay Pines. The video presentation they produced was of astounding quality given they had only 3 days for filming and editing the 2 hours of video.

The annual meeting was organized into sessions and included:

· VISN telemedicine updates

· Reviews of VHA presentations at the American Telemedicine Association (ATA) Meeting

· A review of cross federal telemedicine collaborations

· Highlights from the ATA vendor fair

· Breakout sessions

· Live audience participation by telephone

John Peters, Suzana Fox and Veta Brooks did amazing work behind the scenes to manage the logistics of what was a highly successful meeting. We estimate that using VAKN saved VHA over $200,000 in travel and accommodation. It

also meant that people who could not have physically attended the meeting due to restricted travel budgets could participate. We are grateful for all presenters and participants who so readily gave of their time.

So, what does our experience from doing this, and the feedback we have received, suggest for our 4th Annual VHA Telemedicine Meeting in 2003?

We want your feedback to craft this into yet another groundbreaking meeting. Our proposed plans are outlined below.

The Annual VHA Telemedicine Meeting will take place separately from ATA this coming year. The details are as follows:

1. April 2003 – We have a face-to-face meeting for VHA attendees at the 2003 ATA meeting in Orlando on the Saturday prior to the meeting, including workshops.

2. VHA exhibitors at the ATA vendor fair will have an opportunity to present their programs on video that will be recorded for later broadcast at the 4th Annual VHA Telemedicine Meeting in May 2003

3. Designated VHA reviewers attend ATA sessions on home-telehealth, teleophthalmology, telepathology, telemental health, teledermatology, telecardiology and emergency and disaster management

4. A video review of the vendor fair at ATA is recorded for later broadcast at the 4th Annual VHA Telemedicine Meeting in May 2003

5. In May 2003 the 4th Annual

Telemedicine Meeting in St Louis, will be broadcast live via the VKN from St Louis. A draft agenda for the meeting could include:

· Presentations of exemplary VHA telemedicine programs*

· State of the art reviews on home-telehealth, teleophthalmology, telepathology, telemental health, teledermatology, telecardiology and emergency and disaster management (including report on ATA sessions)

· Video presentation of VHA exhibits at ATA

· Video presentation of vendor fair at ATA

· Feedback of workshops from April meeting

The exemplary VHA telemedicine programs presented could be VISN or facility programs selected after a formal solicitation and reviewed by an expert panel. There will be ample opportunity for Q&A segments. All sessions will receive CMEs and CEUs.

6. Throughout 2003 we propose having a series of half-day national VHA telemedicine meetings that are interactive using VAKN and that cover telemental health, teleophthalmology and home-telehealth.

What you see above is a preliminary proposal for national VHA telemedicine meetings during 2003. We do not yet have funding for this program and we have not yet negotiated the agreements with EES and the ATA to make the requisite parts possible. As with previous telemedicine educational programs

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we have had to fight for the resources and will have to do the same next year. We urgently need your feedback on this, or any other program you want to suggest in fiscal year 03. So, please e-mail me at Adam.Darkins@Med.Va.Gov with your responses to the following questions:

A.   Will the above program help in meeting your needs to stay in touch with the future direction of telemedicine?

B.   Are you in agreement with a strategy that makes telemedicine much more widely available using VAKN?

C.   Do the proposed sessions cover your needs or have you additions/suggestions?

We have a unique resource at our disposal through our association with EES and need to use it in a way that is appropriate to deliver training and education. We need your feedback and support to move this forward. Please e-mail me as soon as you can and we can then use your input to move things forward.

The Annual VHA Telemedicine Meeting will take place separately from ATA this coming year.

Dates to Remember

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September 16, 2002 - Deadline for presentation proposal abstracts for ATA 2003 in Orlando, FL (Apr 27-30) - Proposal abstract requirements (including submission form) may be found at

http://www.americantelemed.org /abstracts2003/call03.htm

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Thursday Sept 19, 2002, 2PM Eastern on the

VA Knowledge Network (VAKN)

Introducing VHA Telemedicine's 'Tele-Mental Health Tool Kit' to help create a unified approach to the delivery of Tele-Mental Health services in VHA.

13 plus 14 equals 23
Sandra K. Schmunk, MA

13 plus 14 equals 23. No, that is not an example of "fuzzy math"—, it's the new VISN 23. Through reorganization, VISN 13 with facilities in Minnesota, North Dakota and South Dakota, joined up with VISN 14 with facilities in Iowa and Nebraska.

This integration is expected to save money which will be used to expand access and enhance services for veterans living the in the Midwest. Although the combined network will rank as the eighth smallest among the 21 remaining networks, it covers the 3rd largest geographical area.

This geographical area encompasses urban, suburban, rural and frontier territory. The new VISN operates nine medical centers; 35 community based outpatient clinics, four domiciliaries, and seven VA nursing homes, affecting 10 states across the Upper Midwest and Great Plains.

Active telemedicine programs in both VISN 13 and 14 supported clinical applications such as mental health, cardiology, orthopedics, dermatology, pulmonary and wound care, to name a few.

In addition, the technology was (and continues to be) used for patient education for smoking cessation, diabetic care and nutrition to various community-based clinics in Minnesota, North Dakota, South Dakota, Iowa and Nebraska. Witness these "success stories":

* Burn patients in rural North Dakota receive their follow up care at Regions Burn Center in St. Paul, Minnesota. They avoid the long, uncomfortable drive (often six hours or more) by "seeing" their health care provider through videoconferencing at their community clinics.

* When the nuclear medicine specialist in Ft. Meade, South Dakota retired, patients were faced with having to drive long distances to receive nuclear medicine studies. Telemedicine provides the technology that enables

VA UPPER MIDWEST HEALTH CARE NETWORK
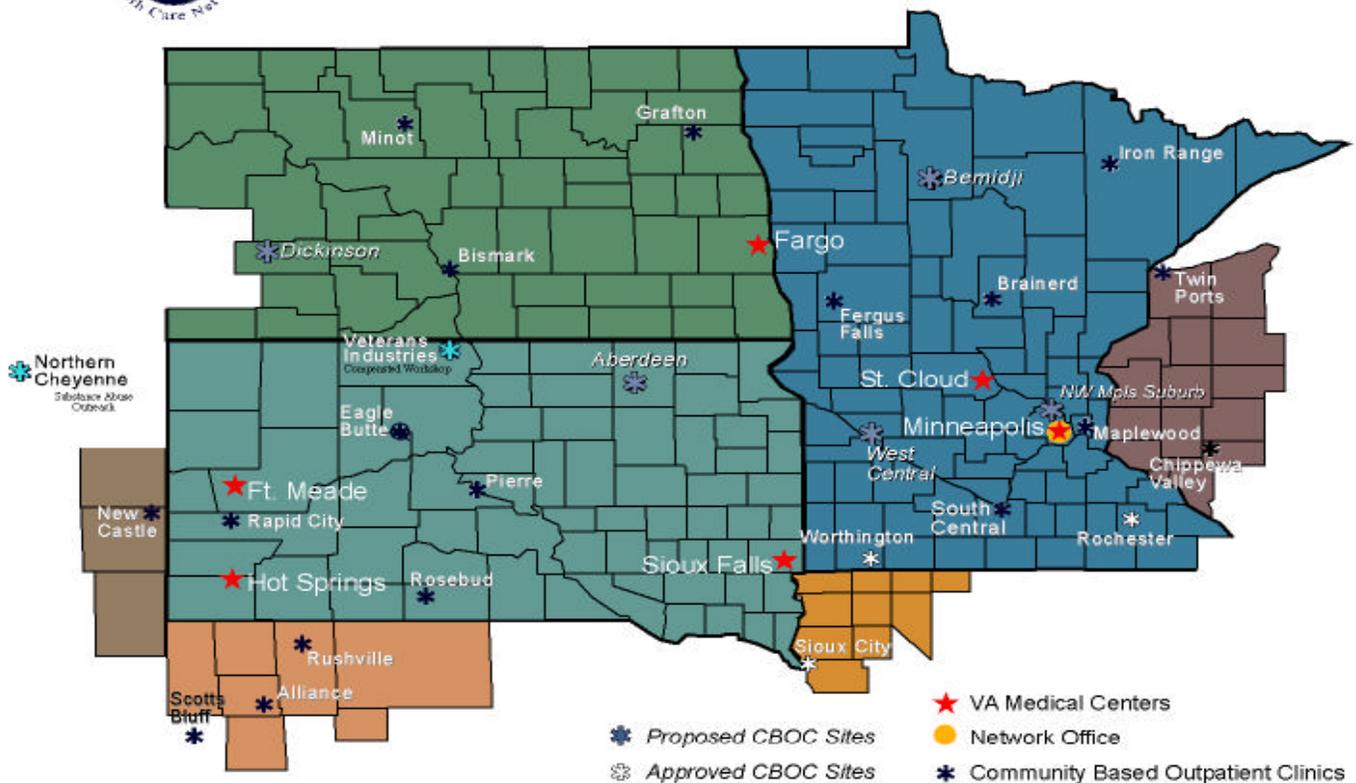
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13 plus 14 equals 23

Sandra K. Schmunk, MA

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specialists in Minneapolis to read those studies and save patients the time, inconvenience and cost of driving to another center.

* In Fargo, North Dakota, diabetic patients receive sight-saving eye screening through digital imaging. These digital photographs are read by ophthalmologists in Minneapolis, Minnesota. The specialist's time is utilized more effectively since one specialist can read several studies in the time in would take to see one patient in person. The technology has improved screening rates for diabetic retinopathy in an efficient, cost-effective manner.

* Omaha, Nebraska provides vascular, orthopedics, plastic and general surgical consultations to Grand Island, Norfolk, North Platte and Lincoln. This improves pre-operative evaluations and allows for post-operative follow-up in the patient's home community. This helps to decrease the length of stay for surgical patients.

* Omaha has also provided humanitarian assistance to families of patients who are hospitalized outside of their home communities. Family members can see and speak to their loved ones and discuss care issues with clinical staff.

* Both individual and group therapy for Post Traumatic Stress Disorder are provided through telemedicine in the community based clinics of Dubuque, Quincy and Waterloo, Iowa. Patients are more apt to receive timely therapy and are also less likely to drop out of their sessions.

* Iowa City VA provides screening of nursing home patients prior to their transport for emergency care; this permits safe triage of these patients. Iowa City is also studying the use of small home health units to manage chronically ill patients.

The merger of VISN 13 and VISN 14 provides opportunities for collaboration and sharing of resources, knowledge and experience. The new VISN faces the continued challenge of providing medical access to patients over a large geographic area consisting of urban, rural and frontier settings. Telemedicine will help to meet this challenge.

Fargo Facility

A Successful Vision: Diabetic Retinopathy Surveillance Program

Sandra K. Schmunk, MA

Diabetic veterans in rural North Dakota are receiving their eye care from ophthalmologists in Minneapolis, Minnesota, without having to leave their home state. This innovative approach for the provision of eye care to diabetic patients uses telemedicine technology and is the brainchild of Dr. Mary Lawrence, Associate Chief, Ophthalmology Section, Minneapolis VAMC.

Diabetes is a significant health issue, due to the seriousness of the condition and the large numbers of people that are affected. According to the American Diabetes Association (ADA) diabetes is the sixth leading cause of death in the US. Nearly 450,000 people over the age of 25 died as the result of complications due to diabetes. Unfortunately, there is no cure for this disease. It is therefore critical that individuals with this disease receive the proper treatment in order to prevent the development of complications associated with diabetes.

There are approximately 17 million people or 6.2 percent of the US population that has diabetes and the numbers appear to be growing. According to the Center for Disease Control, the cost to treat diabetes in the United States is approximately $98 billion; $44 billion for direct medical costs and $54 billion for indirect costs such as disability, work loss, and premature mortality. The ADA tells us that 1 out of every 10 health-care dollars and about 1 out of every 4 Medicare dollars are spent on people with diabetes. It is also the leading cause of blindness in people ages 20-74. Each year, approximately 12,000 to 24,000 people lose their sight due to diabetic retinopathy, an unfortunate complication associated

with this disease.

The VA cares for a much larger proportion of people with diabetes than do other health systems. Approximately 18 percent of all the VA patients have diabetes. Identifying diabetic retinopathy must be approached proactively because it is often asymptomatic. This is the reason for the clinical standard of annual retinal examinations for diabetics that has been adopted by many health organizations, including the VA. Screening for diabetic retinopathy is so important for the prevention of complications that is it a "performance measure" for the VA. Long waiting times for eye exams and the necessity of traveling long distances for rural patients has proven a challenge in achieving this goal.

In 2001, Dr. Lawrence received a grant from the VHA Telemedicine Strategic Health Group in Washington, D.C. to develop a telemedicine Diabetic Retinopathy Surveillance Program. Since a contributing factor to poor compliance with annual eye examinations in diabetics is limited access to ophthalmic care, one intention of the project was to study the clinical utility of such a program if deployed in remote VA medical centers that do not employ ophthalmologists. The digital retinopathy surveillance program in Fargo began in March of 2001 with the goal of increasing the numbers of veterans screened for retinopathy. The project uses digital photography for diabetic retinopathy screening. The patients have their retinal images taken by a clinic nurse or technician at the local clinic where they receive their primary diabetes care. The digital images are then sent (actually

posted on a network server at the Minneapolis VA via file transfer protocol) from the remote sites to the Minneapolis VAMC, where ophthalmologists skilled in the evaluation of diabetic retinopathy evaluate the images to screen for the presence or absence of high-risk diabetic retinopathy. Only those persons who demonstrated high-risk criteria by digital image analysis are then referred for specialty evaluation and possible intervention. If retinopathy (or any other ocular pathology) is found, the patient is referred for confirmatory examination and possible treatment.

The major aim of the project was to improve access to ophthalmic care, thereby improving compliance rates for annual eye examinations. A reduction in the overall prevalence of visual impairment in diabetic clients was also expected. Another anticipated benefit of this program was to decrease the costs of caring for this population of diabetics, both in terms of transportation and lodging expenses as well as costs of visual impairment (blind rehabilitation services). Finally, since we expected it to be more efficient for clinicians to read digital images than to see patients in a face-to-face visit, waiting times for eye clinic appointments would be reduced.

Prior to fully implementing the project, a pilot study was performed to determine the number and type of images needed to detect retinopathy. We found that three dilated retinal images and one external image were required for adequate screening via telemedicine. Once the procedures were established, the project began screening patients.

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Capitol Hill Telemedicine/Telehealth Educational Sessions

John Peters, MS

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to the public, and are held in the U.S. Capitol or nearby congressional office buildings. The steering committee's activities are supported by a combination of public and private sponsors.

Due to VA Central Office's proximity to Capitol Hill, I have been able to attend some of these presentations and provide the brief summaries below. If you would like to learn more or if you will be traveling to Washington soon and have an interest in attending a session please contact me at John.Peters@hq.med.va.gov.

June 12th Capitol Hill Health Care Technology Demonstration and Lunch Briefing on Interconnected, Electronic Health Information Infrastructure

Approximately 300 people, including four members of Congress, and about 30 congressional staff members attended this daylong event at the Dirksen Senate Office Building. VHA Telemedicine exhibited alongside about 30 other government, academic and industry organizations including: Department of Defense, the National Library of Medicine, the Department of Health and Human Services, GE Medical Systems, the University Hospitals of Columbia, and Cornell, Georgetown University, Siemens Medical Solutions, and the Telemedicine Center of East Carolina University, et al.

The day's events included a lunchtime roundtable entitled 'Implementing an Interconnected, Electronic Health Information Infrastructure' which featured leaders from the Department of Defense; IBM; HL7; New York-Presbyterian, The University Hospitals of Columbia and Cornell; RXHub; HHS's National Committee on Vital and Health Statistics; and the Massachusetts State Department of Health.

The two take-away messages from the day were: technology is being used to improve quality, safety and cost-effectiveness of health care, and Congress should encourage use and dissemination of such technology.

VHA's participation in the daylong demonstration fair is just one of many ways to help get the word out about our telemedicine programs and activities. If you would like to volunteer to represent your VHA Telemedicine program/project in future events like these, please contact me at John.Peters@hq.med.va.gov

June 26th Capitol Hill Telehealth Session - Automated Approaches to Reducing Medical Errors: Can Technology Help Better Inform Clinical Decision-Making?

About 65 people attended this 90-minute lunchtime panel presentation session at the Dirksen Building to learn how various organizations are attempting to use technology to better inform clinical decision-making as well as pending legislation related to IT solutions for medical errors. The panel presenters included:

- Eduardo Ortiz, MD, MPH, Senior Service Fellow, Agency for Healthcare Research and Quality (AHRQ), Department of Health and Human Services(HHS) – spoke of AHRQ's IT related Request for (Grant) Applications (RFA) under the Clinical Information to Promote Patient Safety (CLIPPS) program.

- CDR Robert Wah, MC, USN, Office of the Assistant Secretary of Defense (Health Affairs), TRICARE Management Activity – spoke of DoD's HIMS (CHCS II) and the benefits of DoD's centralized medication order database.

- Joy Keeler, MBA, Chief Information Officer, University of Illinois Chicago Medical Center – described U of I Med Center's planning, implementation and (2001 Davies Award winning) use of its Gemini computer-based patient record system to share information and improve health care delivery amongst its 8 satellite clinics operating

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Capitol Hill Telemedicine/Telehealth Educational Sessions

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within its 20 mile radius.

- Randy Miller, MD, Professor and Chairman of Biomedical Informatics, Associate Director of the Informatics Center, Vanderbilt Medical Center (affiliated with VHA's Nashville CBOC, and soon to be home of a password-protected Web site for patients called MyHealthAtVanderbilt) – described Vanderbilt Med Center's use of computer systems to share information and improve health care delivery with a focus on prescription order entry.

July 24ᵗʰ Capitol Hill Telehealth Session - Advances in Chronic and Home Care: Using Health Information Technologies to Empower Patient-Centered Services

Approximately 30 people attended this session, in a meeting room under the U.S. Capitol, to learn how the coincidence of improved IT capability and diminished economic resources has caused health care providers to increasingly diffuse delivery health care and information to alternative care sites, especially with respect to chronic health conditions. The diffusion of care and information into non-health care settings sharpens the focus on patient-centered care, where the patient is much more involved in the decision and treatment process. The panel presenters included:

- Seong K. Mun, PhD, Director and Professor, ISIS Center, Georgetown University Medical Center – described their Diabetes home telehealth project with outcomes based on 16 enrollees.

- Audrey Kinsella, MA, MS Research Director, Information for Tomorrow, Home Telehealth Research Services – former content developer for the Telemedicine Information Exchange shared her consultant viewpoint on current and future home telehealth activities.

- Michael E. Lemnitzer, Senior Vice President, American TeleCare, Inc – detailed how his products continue to evolve to support the burgeoning home telehealth market, highlighting ATI's participation in a Centers for Medicare and Medicaid Services funded home telehealth study of 1500 urban and rural diabetic Medicare patients conducted by a New York state consortium (including VISN 2, Columbia University, et al.)

- Michael J. Rosen, PhD, Director, Rehabilitation Engineering Research Center (funded by the Department of Education's National Institute on Disability and Rehabilitation Research), National Rehabilitation Hospital, Washington, DC – shared with the group a list of reasons why (ever expanding IT communication 'palette,' proliferation of clinical/rehab devices for smart home applications, etc.) now is the time for home telehealth/telerehabilitation.

- Philip R. Appel, PhD, Research Psychologist, Rehabilitation Engineering Research Center, National Rehabilitation Hospital, Washington, DC – discussed the benefits of televisits compared with traditional face-to-face encounters.

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The two take away-messages from the day were: technology is being used to improve quality, safety and cost-effectiveness of health care, and Congress should encourage use and dissemination of such technology.

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A Successful Vision: Diabetic Retinopathy Surveillance Program
Sandra K. Schmunk, MA

The project proved a success and the evaluation included several outcome perspectives.   Evaluation of the surveillance system implemented in Fargo, North Dakota included patient and staff satisfaction, clinical efficacy, and an economic analysis. The Carlson School of Management, University of Minnesota developed the economic analysis by assigning costs to alternative methods of performing the retinopathy surveillance. The strategy employed was to create a model that would be functional for the current VA sites and flexible to allow for any future needs.   The flexibility of the model allows the end user to change inputs and assumptions that are currently built into the model. Modifications in areas such as labor costs, diabetic population changes and travel costs can be made. The Carlson team that performed this analysis received the prestigious Dornblaser Award from the University of Minnesota for their efforts.

The project has become a program with plans of expanding to two other sites— St. Cloud and the Minneapolis Medical Centers in Minnesota.   To date, this project/program has screened 1000 patients and demonstrated very positive results.   A major goal was to improve the diabetic retinal surveillance rate, which was 46% prior to project implementation.   In the first year this performance measure showed notable improvement with compliance rates reaching 71%; the next goal is set at 85-90%.

Following is a summary of the project findings:

Patient and Staff Satisfaction

Patient surveys show a high level of acceptance for the procedure. Here are some quotes:

"Great technology! Beats going to Minneapolis!"

"I strongly encourage all those who need this type of eye exam to have it done this way."

Staff ophthalmologists find the images easy to read.

"You're on to something here. This is much easier than examining a patient face-to-face".

Clinical Efficacy

Raised diabetic retinal surveillance rates from 46% to 71% in first year.

More diabetic patients are being diagnosed and treated thus reducing the incidence of blindness.

Safety

No incidents of acute angle closure or other untoward events.

Rapid turnaround for emergent conditions.

No allergic reactions or intolerance to drops or equipment.

Economic Analysis

The model demonstrated a potential five-year cost-savings for all of the medical centers within the former VISN 13.

The two most important variables in the cost analysis were the number of diabetics at a given site and the cost of the digital camera and ancillary equipment, including the computer software.

Since digital surveillance is less expensive than the current face-to-face protocol, cost-savings may be achieved by encouraging all diabetics to have the initial retinopathy surveillance done digitally.

There is great potential to reduce waiting times for patients seeking eye clinic appointments.   This potential comes from providers being able to see more patients in less time by looking at the digital pictures rather than doing a face-to-face evaluation.

Less physician time will be spent screening; so more time can be spent on more complex eye care issues.

In general terms, the model shows that utilizing digital technology for diabetic surveillance examinations is cost-effective in both the short- and long-term.

*Of note: Telemedicine was not sufficient alone in about 22% of the time during the first year. The initial start-up phase presented a learning curve for utilizing the technology. Of this 22%, some patients were referred for face-to-face consultation due to inadequate images and some due to identification of pathology.

There is no teacher like experience. Here are some considerations to keep in mind when developing a surveillance program at a remote site:

- Site selection based on an objective needs analysis.

- Obtain support from upper management at the remote site.

- Determine the practical issues of equipment location, staffing, consult and report generation.

- Consider the organizational culture because it impacts acceptance of the new technology.

- Barriers, such as conflicting job duties, computer phobia, lack of knowledge of photography, and lack of knowledge in

What I Now Know …
about Diabetic Retinopathy Screening
David Gratz

Continued
A Successful Vision

ophthalmology will arise. These obstacles can be overcome with timely, focused training.

- Include remote site staff in planning from the onset. Videoconferencing helps!

- Include discussion and brainstorming on how the workflow will proceed.

- Clarify duties, responsibilities and expectations at both ends, including notifications, turn-around time, emergency procedures, and patient follow-up.

- Solicit and incorporate feedback into the procedure.

- End-users will need not only hands-on training to begin with, but also continued technical and general support after the initial training.

- The individual involved with training staff must be able to teach basic photography, eye anatomy and physiology, protocols and data backup procedures to the "lay" person.

- Training guides can include manuals, skills checklists, tutorials and evaluation guides for self-assessment.

If you would like further information please contact:

Sandra Schmunk, Telemedicine Coordinator at: Sandra. Schmunk@med.va.gov or

Gary Michalec, Certified Retinal Angiographer at: Gary. Michalec@med.va.gov.

I have been asked to provide some insight into the sometimes-daunting world of telemedicine devices. I don't profess to be a biomedical engineer but will certainly do my best to give you information based upon my discussions with experts in the field. As I embark on my inaugural article in this great newsletter, I want to thank the current staff for asking me to be a contributor. In each issue I will be highlighting a specific type of equipment that is used in the telemedicine arena. Although there are many options for each clinical application, and an associated vast amount of technical information, I'm going to try to narrow the focus of this section to that which is manageable and offers you a starting point for further research. Let me give you a little introduction of myself. My involvement in telemedicine goes back to around 10 years ago when technology was much different. Getting "connected", or networked, was very difficult and very expensive. Initially, we connected a point-to-point fiber system between two medical centers in the state of Florida to provide access to care between the two facilities. Over a period of nearly five years, we developed and managed a very active telemedicine program in areas such as cancer screening, nephrology, neurosurgical consults, cardiology and education. Then, about five years ago, the entire VISN became linked via a telecommunications network to promote education, administration and telemedicine. The telemedicine aspect was the most difficult in terms of both in acceptance and integration—it became a real challenge. My background in medical television and biomedical photography has helped me with my role in telemedicine. What I bring to the table is an understanding of how images should look, how audio should sound, and a bit of how we should treat patients based upon my experience in dealing with patients for the last 28 years. (Since the editor has asked me to not take up the entire newsletter—she knows how wordy I can get—I will move on).

My Perspective:

Technology is just one piece of the whole picture. Ultimately, it's all about our patients. An inexpensive gizmo may do the same job as an expensive gizmo, but we must be assured that the information we receive with all our technology is accurate, non-threatening, safe and cost-effective. In each article I will try to address issues such as how the equipment might be of clinical value based upon research already done in the field and by talking to clinicians who are currently using the technology. I'll attempt to make this section technically informative enough for administrators, clinicians, and technicians to pursue further exploration of the technology's value.

My Disclaimer:

Here is my disclaimer statement: I, and the newsletter staff, in no way endorse any particular product. There are many good products out there, not all of which I can present. Factors such as your budget, user characteristics, others' recommendations, and the clinical application will help you to make your own decision. I will present some facts and also relay some feedback from our VA users about their experiences with the product. This will give you the opportunity to hear the positives and negatives so

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What I Now Know …
about Diabetic Retinopathy Screening
David Gratz

(Continued from page 11)

you are on your way to making an informed decision. If you're interested in a piece of equipment, most of the vendors would be more than happy to loan it to you so your providers can put their hands on it and actually use it. This is by far the best way to make your final decision, not by reading some article. I'll get off my soapbox now.

One of the hot topics today for telemedicine and medicine in general is retinal screening for diabetes. There is some controversy in the ophthalmology world in doing diabetic screening via telemedicine with the cameras such as I'll discuss. In doing the research on this subject it became very apparent that this is not just a stateside issue; this is a worldwide issue. Millions of dollars, perhaps billions of dollars, are spent every year on blindness that could have been prevented with proper screening and treatment. As far back as 1990, research was done which determined that screening and treatment for eye disease in patients with diabetes and glaucoma could generate annual savings of $350 million to the federal budget and 100,000 person-years of sight.[1] Diagnosis and treatment of retinopathy in patients with Type 1 diabetes resulted in a cost of $966 per person per year of sight saved.[2] The prevention of diabetes related blindness ranks above other medical interventions commonly provided in terms of cost-effectiveness.[3] A mobile screening program in England was evaluated for persons with diabetes and it was found that 20 percent of those not attending diabetic clinics had retinopathy, and 6.5 percent needed urgent ophthalmologic assessment.[4] It has been estimated that a comprehensive screening program that included detection, referral, treatment and follow-up would reduce new blindness by 10 percent in persons

less than 70 years of age.[5] To add to the problem, patients with diabetes living in rural areas are less likely to seek help.

There are two types of cameras, the non-mydriatic and the mydriatic. One difference is that the mydriatic uses a dilation process that allows a more expanded look into the eye. These cameras may be of a higher quality and much more costly. The makers of non-mydriatic cameras claim that you do not have to dilate, but in fact a number of these patients will have to be dilated. Most of these cameras are based upon visualizing a three millimeter, or larger, pupil size, which is not always possible in diabetics. There are several players in the retinal camera arena: Canon, Topcon, Zeiss, Kowa, Lombart, Nidek, Nikon and Optos. I have written about these in no particular order. You will find some features, an overview of potential portability into VistA, and estimated costs.

(see chart on page 13)

Some of the vendors I spoke with indicated that digital backs and VistA capabilities are forthcoming. Dicom and twain images, industry standards, can be imported into VistA from many devices. This may add a little extra time to each capture, but it's fairly seamless.   Ask for demonstrations involving the vendor's equipment and VistA Imaging. Before you buy anything, try it out in your setting. This means loading VistA, VistA Imaging, and networking software on the vendor's machine and seeing if you can really import images successfully. There is no substitute for seeing this before you buy. You can not always trust company claims. There also is an integrator that has done quite a few installs for the VA. Lombart

Instrument is nationwide and can supply: Canon, Kowa, Nikon and Topcon. There are many different options and configurations available. An anterior color fundus non-mydriatic camera with computer, monitor, DVS software, training CD, training, and technical support starts at $19,990. They also provide portability into VistA.

My sources tell me that if you are just screening in remote areas you may want to choose one of the non-mydriatic cameras and purchase a mydriatic camera for the larger centers for a more comprehensive look into the eyes. These cameras do not replace the need for routine in-person eye exams with the proper equipment.

Most of the vendors have sold equipment to the VA and have list of VA professionals that you can call for reference.   I would like to thank Dr. Leonard Goldschmidt from VISN 21 and Dr. Angela Ayers from VISN 8 for their expert advice in writing this article.

Requests for future article topics or comments please e-mail me David. Gratz@med.va.gov.

Diabetic Retinopathy with

Cotton White Wool spots on left eye
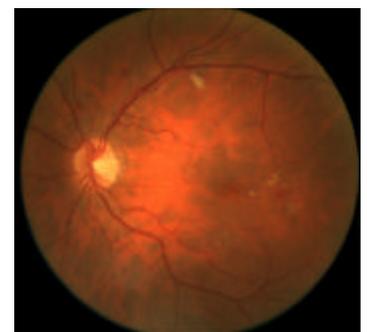
Continued

What I Now Know …
about Diabetic Retinopathy Screening
David Gratz

Vendor	Models	Type	VistA Capable	Comments	Cost (Estimated)
Canon	CR6-45NM	Non-Myd	Dicom	30 & 45 degree view / Pupil size 3.7 or larger	$ 25,000 EYEQ computer system
	CF-60UD	Myd	Dicom	40 & 60 degrees / Fluorescein	?
	CF-60Uvi	Myd	Dicom	30,40,60 degrees / Fluorescein	?
Kowa	Non Myd	Non-Myd	Dicom	20 & 45 degrees / Digital	$23,400 with computer imaging system
	RC-XV3	Myd	Dicom	20,35,50 degrees	$43,600 with computer imaging system
Nidek	NM-200D	Non-Myd	Dicom & twain	Hand held – 30 degrees	$18,436 with imaging software
	NM-1000	Non-Myd	Dicom & twain	1.5 mega pixel digital / 45 degrees	$21,675 with imaging software
	3DX Digital	Myd	Dicom	30 degree -/ 6 mega pixel camera	$38,245 with imaging system
Nikon	NF-505	Myd	35mm slides	20,30,50 degrees / Not Digital / Pupil 3.9 or larger	$21,824
Optos	Optomap	Non-Myd	TIFF JPEG	Scanning red & green laser for early detection	per exam based 100 patients per month @ $18ea
Topcon	TRC-NW6	Non-Myd	Vista	30,45 degrees / Pupil 4mm or larger	$22,000 with computer image system
	TRC-NW6S	Non-Myd	Vista	30,45 degrees / Pupil 4mm or larger	$29,000 with imagenet/mosaic computer image system
	TRC-NW100	Non-Myd	Vista	45 degrees / Pupil 4mm or larger	$19,000 base camera
	TRC-50EX	Myd	Vista	20,35,50 degrees / Fluorescein Photography	50-70K with imaging system
Zeiss	FF450	Myd	Vista	20,30,50 degrees / Fluorescein	$32,630 base + $29,900 760x510 back or $38,500 1300x1100

Continued

What I Now Know …
about Diabetic Retinopathy Screening
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CANON   http://www.usa.canon.com/html/industrial_medeq/ophthalmic index.html

NIDEX   http://www.nidek.com/fundus.html

KOWA   http://www.keeler.co.uk/retinalimaging/retinalimaginghome page.htm

TOPCON   http://www.topcon.com/

OPTOS   http://www.optos.com

ZEISS   http://www.humphrey.com/Systems/prod&sol.html

LOMBART   http://www.franklinweb.com/topconretinal.htm

NIKON   http://www.nikonusa.com/usa_product/product.jsp? cat=3&grp=11&productNr=N505

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2. Cost-Effectiveness of Current Approaches to the Control of Retinopathy in Type 1 Diabetics. Javitt, J.C.;Canner, J.K.;Sommer,A. Ophthalmology. 96(2): 255-264.February 1989.

3. Cost-Effectiveness of Detecting and Treating Retinopathy. Javitt, J.C.:Aiello,L. P. Annals of Internal Medicine. 124(1 Part2): 164-169. January 1, 1996.

4. The Evaluation of Mobile Screening for Retinopathy. Thompson, C.: Leese,G.; Scottish Medical Journal. 40(1): 5-7. February 1995.

5. Use of Mobile Screening Unit for Retinopathy in Rural and Urban Areas.Leese, G.P.;Ahmed,S.;Newton, R.W: .Jung,R.T.;Ellingford,A.;et al. British Medical Journal. 306(6871): 187-189. January 16, 1993.

VHA Telemedicine Unveils New Internet and Intranet Sites

John Peters, MS

After much anticipation, the Telemedicine Strategic Healthcare Group, in cooperation with the VA's Employee Education Service, is pleased to announce the creation of two new VHA Telemedicine resources:

www.va.gov/telemed - The VHA Telemedicine Internet Web site

vaww.va.gov/telemed – The VHA Telemedicine Intranet site

Both sites contain general program information as well as specific resources integral to the success of individual telemedicine projects. One of the major purposes of the sites is to help foster a national program through consistent practices, across VHA, based on a common information resource. These sites will be online by September 1st.

Here is a list of what will be available initially, as well as what is planned for the near future.

Current Web Site Pages

- VHA Telemedicine Home – the portal to all things telemedicine within VHA, with additional links to groups around VHA and beyond.

- VHA Telemedicine Strategy – links to the VHA Notice that outlines the strategic plan for telemedicine in VHA. In the future there are plans to include additional links to individual VISN's, facilities' and Health Care Systems' telemedicine strategic plans.

- VHA Telemedicine Strategic Healthcare Group – information about the team at Central Office dedicated to assisting individual telemedicine programs across VHA.

- VHA Telemedicine Contacts – this is an unofficial (but organized and up-to-date) list of volunteers agreeing to act as a single point of contact regarding the various telemedicine programs, projects or project leaders associated with their VA Medical Center.

- VHA Telemedicine Work Groups – a list of organized working groups created to produce the tools necessary to perform the myriad of tasks surrounding telemedic ine. This page will summarize the groups' work to date and list products or tools created by the group for use by all. The page will also offer a point of contact for those interested in helping the group with its work.

- VHA Telemedicine Programs – This page will be (currently static) a dynamic summary for VHA personnel, veterans and the general public to learn about all VHA telemedicine programs. It will be organized by type of clinical service and geographic location of the facility.

- VHA Telemedicine Training – This page will be the portal to at least half a dozen training modules that comprise VHA's Telemedicine 101. Each training module will focus on a particular facet or policy issue of telemedicine (e.g. Credentialing and Privileging, Home Tele-Health, Informed Consent, etc.) This page will also offer training announcements/reminders for upcoming training at national meetings or over the VA Knowledge Network.

- VHA Telemedicine Publications – This page is the clearinghouse for all VHA Telemedicine (or Telemedicine related) directives, notices, handbooks, information letters, reports and legislation)

- VHA Telemedicine Newsletter – a hot link to current and back issues of the VHA *The Telemedicine News*.

- VHA Telemedicine Newsflash – this page will provide the latest news regarding upcoming meetings, training, etc.

- VHA Office of Patient Cares Services – a hyperlink to parent site of the VHA Telemedicine Health Care Group

Additional Links – this page offers links to individual VHA Telemedicine Program Internet and Intranets sites, as well as links to telemedicine-related Internet sites outside of VHA.

Continued

VHA Telemedicine Unveils New Internet and Intranet Sites

John Peters, MS

(Continued from page 15)

Future Web Site Pages

- One Page National Program Overview (i.e. virtual one-page handout)

- One Page Clinical Program Overview (i.e. more virtual handouts, VHA Home Tele-Health, VHA Tele-Mental Health, etc.)

- Activity Level Database Summary Report

- Outcome Tools Database – Satisfaction Surveys

- Hardware/Network Inventory Database – Minimum requirements guidance

After visiting the sites, please use the sites' feedback feature to let us know what you like, as well as what additional features you would like to see developed.