VHA TELEMEDICINE

THE TELEMEDICINE NEWS

A Green-Fingered Approach to Telemedicine Development

Adam W. Darkins, M.D.

Chief Consultant, VHA Telemedicine

Season's change, plants grow and birds migrate. There are similar regular cycles in the evolution of telehealth. One of these is that every once in a while somebody writes an editorial in which they ask why telehealth is not expanding as rapidly as they think it should? Reading articles like these reminds me of some of my past neighbors. These neighbors used to ask regularly every summer why their garden was not growing well. This was despite the seeds they had spread, the plants they had potted and the shrubs they had planted. These were neighbors of mine back in England, where I grew up and lived before I moved to live permanently to the USA. Gardening is a national pastime in Britain but less so in Colorado where I now live. Here there is much less rain and it is high desert, something that makes the challenges of gardening even more pronounced. Although I am not one of the world's great gardeners I have learned enough to realize that sun, soil and water are critical factors that determine whether

lants and lawns grow well—or do not. The way a telehealth program is structured and the presence of energetic and supportive clinical champions provide the necessary soil to grow a successful telehealth program. Coding of the clinical activity and how payment systems are created to sustain the program is like the water needed to irrigate it and help it grow.

Grant-funded telemedicine programs are somewhat like plants that are being raised in a hothouse. Eventually most hothouse plants need to be put out into the garden where they must battle the weather, pests, pets and competition from other flora (akin to other ways of delivering health care for telehealth). There are often bugs to overcome in the implementing telehealth technologies. There are challenges that are analogous to the weather and pets that sometimes also need to be overcome. However, let's return to coding and reimbursement for payment services and let me try and explain why I believe these ingredients are as essential to the growth of a

Inside this issue:

ATA 2003

Orlando, FL

April 27-30

VHA Telemedicine at ATA Annual Meeting and Expo 2003 – April 26-30 Orlando Convention Center

By John Peters, MS

Plans are well underway for VHA Telemedicine's participation in the upcoming American Telemedicine Association's 8th Annual Meeting and Exposition at the Orange County Convention Center in Orlando, Florida. What follows is a summary guide to help VHA staff make the most of ATA 2003:

VHA Telemedicine ATA Attendee Meeting before ATA – Saturday April 26th 9-12 Noon

This Saturday morning meeting at the Orange County (Orlando) Convention Center has been arranged for any VHA staff fortunate to be able to travel to Orlando for ATA. Those who would like to arrive a day ahead of time to meet with VHA telemedicine colleagues face-to-face to discuss past and future collaborations as well as national developments can do so in this forum. Additionally, this meeting will serve as an informal sneak peek at VHA presentations during ATA 2003 and a prelude to the 4th Annual VHA National Telemedicine Meeting, which will be conducted over the VA Knowledge Network as a series of mid-day (1-2PM Eastern) broadcasts throughout the week of May 19-23.

VHA Telemedicine Exhibit at ATA 2003 Expo – Sunday April 27th-Tuesday April 29th

At the end of October, the VHA Telemedicine Strategic Health Care Group at VA Central Office solicited exhibit proposals from all VHA telemedicine projects/programs. Fourteen proposals were accepted in December.

Here is a quick summary of VHA Telemedicine projects/programs that plan to participate in the VHA Telemedicine exhibit space at ATA 2003:

1. From VISN 1: VHA Boston Endocrinology/Ophthalmology plans to display their "My Care Team" web site used in their Diabetes Case Management and Education Program.
2. Also from VISN 1: VHA Connecticut Home Based Primary Care intends to exhibit their home telehealth program to include demonstrations of various technologies they use to feed information into VistA/CPRS.
3. From VISN 6: VISN 6 Transplant Telemedicine team members plan to explain how they use video teleconferencing for pre- and post-transplant patient care within VISN 6 and beyond.
4. From VISN 8: VISN 8 Community Care Coordination team is planning an exhibit for their home telehealth programs.
5. Also from VISN 8: VAMC Tampa plans to demonstrate how computers and telephones may be used to augment hospice care.
6. From VISN 9 and partner VISN 6: VAMC Huntington, WV and VAMC Richmond, VA plan to describe how they have used video teleconferencing for pre-neurosurgery screening and care, as well as teleconsultation with VHA's Richmond/Southeast Parkinson's Disease Research Education and Clinical Center (PADRECC).
7. From VISN 11: VAMC Indianapolis plans to display how they are using Home Telehealth technology in their post-stroke speech pathology program.
8. Also from VISN 11: VAMC Indianapolis intends to demonstrate how they are using Home Telehealth technology to augment palliative care to veterans at home.
9. From VISN 15: VAMC Poplar Bluff, MO is proposing a laptop presentation that describes their use of video teleconferencing in various programs including provider training and consultation,

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VHA Telemedicine at ATA Annual Meeting and Expo 2003 – April 26-30
Orlando Convention Center
By John Peters, MS

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smoking cessation, and diabetes education.

10. From VISN 19: VISN 19 envisions a comprehensive laptop/VCR presentation entitled "VHA Frontier Telemedicine" that provides an overview of their wide range of telehealth programs in mental health, home health, wound care, diagnostic imaging, and ophthalmology.

11. From VISN 21: VAMC San Francisco returns this year to provide an update on their successful teledermatology program that was demonstrated live during the 2002 ATA Expo in Los Angeles.

12. Also from VISN 21: VAMC Honolulu intends to use a laptop presentation to describe all the telehealth programs found under the "Pacific Telehealth and Technology Hui" project involving VA and DoD health care. ('Hui' is a Hawaiian word that translates to 'togetherness.')

13. From VISN 23: VAMC Minneapolis returns this year to provide an update on their successful teleophthalmology program that was exhibited during last year's expo.

14. From VHA Tele-Mental Health: This multi-VISN presentation will attempt to provide an overview of the successful tele-mental health programs operating across VHA.

The plan is for all 14 of these exhibits to be co-located in the VHA Telemedicine Exhibit space (currently shown, but subject to change) as space number 201 on the on-line floor plan for ATA 2003 Expo at: http://www.americantelemed.org/conf/2003exhibits/floorplan.html.

VHA Telemedicine Panel Presenters at ATA 2003 –
Monday April 28th – Tuesday April 29th

ATA has planned for two and half days of telemedicine panel presentations to run from Monday morning through Wednesday noon. As this issue goes to press, ATA has listed seven presentations by VHA staff. All VHA staff presentations occur on either Monday or Tuesday. Here is a quick summary:

1. Monday April 28th, 8-9AM – Team VA Connecticut Healthcare System: Forrest Levin (IT Architecture); Joseph Erdos (CIO); William McCasland (Information Security); Donna Vogel (Program Manager) presents "Telehealth Implementation: Key Role Responsibilities" during the "Telehealth Implementation" sessions.

2. Monday April 28th, 9:30-10:30 VA Boston Healthcare System's Dr. Paul Conlin presents "Internet –Based Diabetes Education and Case Management" during the "Diabetic Screening and Care" sessions.

3. Monday April 28th, 1:30-2:30 VAMC Honolulu's Dr. Stan Saiki presents "Project TOUCH: Virtual Reality in Distance Medical Education" during the "Technology Enhanced Distance Learning" sessions.

4. Tuesday April 29th, 3:15-4:15 VA Connecticut Healthcare System's Ms. Donna Vogel presents "Case Manager's Telehealth Tool: The CMIS (Case Manager Information System)" during the "Operational Management for Telemedicine Programs" sessions.

5. Tuesday April 29th, 3:15-4:15 VAMC Durham's Dr. John Whited presents "Cost-Effectiveness of a Store and Forward Teledermatology Consult System" during the "Remote Dermatology – Part 2" sessions.

6. Tuesday April 29th, 4:30-5:30 VISN 8's Rita Kobb presents "Developing a Classification for Home Telehealth Populations" during the "Telehome Healthcare Session 2" sessions.

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A Green-Fingered Approach to Telemedicine Development

Adam W. Darkins, M.D.
Chief Consultant, VHA Telemedicine

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telehealth program as water is to the growth of a plant in the garden.

Having sufficient numbers of patients receiving care from a telehealth program is crucially important. This is because patients attract resources. It is a truism in health care to say that money follows patients. Therefore, to all intent and purpose, very small numbers of patients passing through a telehealth program ultimately translate into difficulties with funding the program as part of routine care delivery. The need for having patients to sustain a program applies equally to the public and private health sectors of health care. If an airplane is empty or the seats in a theatre are unoccupied the business will not survive, let alone grow. If an airline or theatre did not sell tickets and keep track of its customers we would not be surprised to see the enterprise fold. So why should a telehealth program be any different? The authors of the editorials I mentioned above seem to be look upwards toward the sky, just as some of my previous neighbors, as if the growth of a telehealth program can depend on manor from heaven.

Although it would be presumptuous of me to suggest that the development of a coding manual for telemedicine in VHA is one small step for the Telemedicine SHG but a giant leap for telehealth in VHA, I believe that it is part of the process of putting the irrigation system in place to help our telehealth programs grow. A team of people that has included Ellen Bradley, Joan Carr, Ellen Clements, Sarita Figueroa, Dr. Linda Godleski,, Gail Graham, Ora Irvin, Stephen Kendall, Robert McNamara, Dr. Elisabeth McSherry, Vickie Nitschke, John Peters, John Quin, Pat

Ryan, Bill Van Stone and Donna Vogel and myself have worked for almost a year to develop this coding manual. It covers synchronous and and asynchronous telemedicine in hospital, community based outpatient clinics (CBOCs) and home-based care. The manual is in the final stages of preparation and this article is to alert everyone to its forthcoming arrival. I cannot give the exact date because this depends on its being approved by VHA's coding council.

If my analogy with gardening has not convinced you about the need for coding for telehealth there are other reasons why it should feature on your radar screen. Over a year ago we ran a report from the VHA data warehouse in Austin that showed a marked discrepancy between the numbers of telehealth consultations that are coded and the telehealth activity we know about from previous survey data. There is not yet a coherent payment mechanism for telehealth services, either in VHA or outside. What was the Health Care Financing Administration (HCFA) and is now the Centers for Medicare & Medicaid Services (CMS) has been cautious in its approach to developing this. Particular concerns have included wanting to see evidence for the effectiveness of telehealth and then needing to develop incentives that benefit patients and providers appropriately. Once there is data about the exact levels of telehealth that are occurring in VHA, then the optimum ways to create revenue flows to sustain and expand telehealth services as fully fledged routine health care services can be developed. For those who are less

interested in the policy and more concerned with immediate practicalities here are some questions you may have pondered that the coding manual will help answer:

- Why should mental health services workload be apportioned to CBOCs whereas most telemedicine is apportioned to a medical center?
- Can you charge 3rd party payers for telehealth?
- How should co-payments be charged?
- How much is the facility fee?
- Is it possible to code for teleradiology?
- What are "count" and what are "non-count clinics" when using telehealth?

So, all you ever wanted to ask about coding for telehealth, but were afraid to ask, should soon be available. This coding manual will continue to be a work in progress for several years. We will need your feedback, ongoing input and support to optimize the process of coding. Not only will this form the basis for how payment systems are created for telehealth it will enable routine quality and outcomes data to be generated which will be vital to making telehealth grow and continue to bloom within VHA.
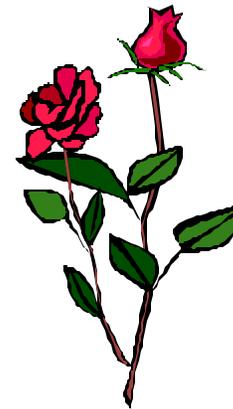
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Please continue to monitor ATA's Web site for additions or changes to the program at http://www.americantelemed.org/conf/annualmeet.htm.

VHA Telemedicine Poster Presenters at ATA 2003 – Monday April 28th, 2:30-4:30

ATA will display posters throughout the Expo, with a special two-hour question and answer session with the poster presenters on Monday afternoon from 2:30-4:30. As this issue goes to press, ATA's current list of posters includes three from VA Connecticut Health Care System: Mr. David Cornwall's "Improving Homecare Provider Efficiency is Good Medicine"; Dr. Joseph Erdos's "Telehealth Solution for the Large Healthcare System"; and Ms. Donna Vogel's "Portable Data Entry Improves Provider Efficiency and Patient Outcomes." Please continue to check ATA sites for any additions at http://www.americantelemed.org/conf/annualmeet.htm.

VHA Telemedicine at ATA 2003 Re -Cap during the 4th Annual VHA National Telemedicine Meeting over VAKN May 19th through 23rd

Highlights from ATA 2003 will be videotaped and presented as interludes during VHA's National Telemedicine Meeting taking place during five mid-day sessions (1-2PM Eastern) through out the week of May 19th – 23rd on the VA Knowledge Network (VAKN).

If you would like to learn more about VHA Telemedicine at ATA 2003 please contact me at:

John.Peters@hq.med.va.gov

VHA Telemedicine ATA Attendee Meeting before ATA:

Saturday, April 26th 9-12 Noon

Dr. Elliot Sandberg: His Message

Chief, Radiology, Denver VA
Associate Professor, Radiology and Neurology, University of Colorado Health Science Center

By Michelle Hill, RN, MSN

In talking to Dr. Sandberg, I found that this interview didn't really serve as a means to profile a trailblazer, but rather to understand his message about telehealth. Our discussion focused on the teleradiology program that he and his colleagues developed—how it was accomplished and why is it important. An overview of the VISN 19 Teleradiology Program is offered in Jeff Lowe's article "Frontier Telemedicine in the Rocky Mountain Network." I hope this article gives you greater detail on the program and an understanding of the perspectives of Dr. Elliot Sandberg. Also, I hope you learn just a little bit about this trailblazer himself.

As I reflect on my conversation with Dr. Sandberg and review my notes, several themes emerge related to the development and success of the program: a problem, a user-driven solution, and working relationships.

A Problem

The problem was a lack of radiologists to meet the imaging requirements of a large veteran population spread across a vast rural region that comprises VISN 19. The resulting solution had been expensive private contracts for basic coverage. Not only was this solution expensive, it did not provide the clinicians with the level of access and involvement with radiology and radiological resources that would be optimal. Hence, Dr. Sandberg and his colleagues undertook to find another solution. The solution

became a teleradiology system that included a Picture Archiving and Communications System (PACS) and a web-based server system with desktop web access and conferencing capabilities.

A User-Driven Solution

Dr. Sandberg is not a newcomer to the field of telemedicine. In the 1990's he collaborated with Jim Grisby, Ph.D. from the University of Colorado on a telemedicine research project supported by the Health Care Financing Agency and the Center for Health Policy Research. The project reviewed telemedicine programs and concluded that the user-driven programs proved most successful. Dr. Sandberg worked to ensure that the teleradiology solution was user-driven.

To this end, Dr. Sandberg and his colleagues set on a mission to find what the clinicians needed to meet their needs and desires related to radiology. In the process of building the teleradiology solution, he found the clinicians to be the greatest allies and invaluable to the success of the program. Only after identifying the users' needs, did he and the VISN team embark on exploring available solutions. They were cognizant that the user needs could change; therefore, whatever solution must be robust and capable of being modified and expanded in the future. Their choice was an AGFA system.

Working Relationships

During the telephone interview, I repeatedly asked Dr. Sandberg about *his* leadership, *his* achievement with the program, and *his* perspective. Repeatedly, Dr. Sandberg told me that *he* did not accomplish this, but it was a collaborative effort. It was a hospital and VISN enterprise and product. Working relationships made it happen. Relationships with clinicians, administrators, technicians, and the vendor helped to define the solution; continuing relationships serve to expand the clinical application of the technology. Partnership relationships with organizations

> *"Relationships with clinicians, administrators, technicians, and the vendor helped to define the solution; continuing relationships serve to expand the clinical application of the technology. "*

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By Michelle Hill, RN, MSN

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such the Department of Defense are also critical and help to reduce duplication of services. Dr. Sandberg stated that working relationships such as those shared with his support staff, including Greg Weber, PACS Administrator and Beth Tramel, Registered Technologist, are essential. Personal relationships with colleagues are of great help to accomplish goals.

Dr. Sandberg and Greg Weber, PACS Administrator using Teleradiology system

A Few Words

When asked if he had anything else to share with the readers about the development of this program, Dr. Sandberg offered a few pearls of wisdom:

- "Never presume anything."
- "The devil is in the details."
- "You have to be attentive to details."
- "A PACS is only as good as the network."
- "Never discount the importance of perception with respect to the value of any endeavor."

Position Statement with Respect to PACS (provided by Dr. Sandberg)

A successful implementation of PACS technology enhances the value of an imaging program from both the clinical and financial perspective. The diagnostic radiologist serves a critical role as a consultant guiding the referring providers through a maze of simple, as well as complex, imaging procedures designed to support effective patient management. The centralization of interpretive services within imaging is a cost and quality effective option in conjunction with a user-driven PACS initiative. The nationwide shortage of subspecialty-trained radiologists when considered in the light of escalating costs for contract services enhances the value of a PACS/teleradiology program. This is particularly true within the managed care arena. The 'art' involved in developing such an entity must be focused on the initiation and maintenance of a close collegial relationship between the provider and the radiologist, regardless of the distance separating the collaborating individuals. A robust PACS/teleradiology program must acknowledge this point through the development of innovative software facilitating such discourse and cooperation. A web-based clinical review system has proven very effective in support of this goal. The inclusion of a conference mode enables multiple parties to actively discuss a case while jointly annotating on respective images. The perceived chasm represented by the distance separating the consultants is effectively bridged in this manner. A successful PACS program improves access to diagnostic imaging studies for Radiologists, providers and patients. The impact with respect to resident education cannot be overstated. A web-based clinical review format utilizing desktop PC access is exceptionally practical within this context. A flexible software application that can be modified for individual providers enhances a dedicated approach to study review. PACS technology facilitates a more effective utilization of time and staff resources for both providers and radiology services. An inclusive PACS initiative as evolving in VISN 19 facilitates cooperative ventures between the VA and the DOD. These joint programs are designed to improve access to quality care w/in a responsible financial framework.

The encompassing theme in developing a PACS/teleradiology program should be the enhancement of the relationship between radiologists, clinical providers and patients. The improved access to information to include consultative services acts as the cornerstone of such a cooperative venture.

-Elliot Sandberg, MD

Forging New Frontiers
Trailblazer Jeff Lowe, M.S.W.
VISN 19 Telehealth Coordinator

By Michelle Hill, RN, MSN

If you read his article in this edition, it will be apparent to you that Jeff Lowe, Telehealth Coordinator for VISN 19, has an expansive job and is blazing trails in the Rocky Mountain frontier. There is a lot going on out there! I spoke to Jeff on the telephone to try to gain some information about him and his experiences related to telehealth. What follows is what I discovered about this trailblazer.

Jeff is a quick study. He has learned about working within the VA concurrent with learning how to successfully build telehealth programs. As a telehealth coordinator, his interactions must span across clinical disciplines and departments; one must effectively work with a variety of clinical, administrative, and technical personnel to build new programs. Given Jeff's professional background, he was well suited for the task.

His Background

Jeff 's clinical training is as a social worker. He received his Masters of Social Work in 1995 from the University of Denver. He worked as a community mental health psychotherapist and to this day maintains a private practice in an adult outpatient setting. To complement his clinical, people-oriented side, Jeff has experience with technology. Starting with

high school, and later at Northern Virginia Community College, Jeff received technical training and followed that with a 10-year career in broadcast and educational television. He first combined his two talents in the 1990's when he developed a computerized patient record system for the mental health center at which he was employed. Jeff has been successful—so much so, that after 2 years with the VA he was appointed to a VISN-level position.

Jeff joined the VA in the summer of 2000 when he took the new position as Telemental Health Coordinator for the Cheyenne VA with the responsibility of developing a program to provide services to four sites, in three different states. His position was funded by a new clinical program grant administered through Dr. Adam Darkins and the VHA Telemedicine Strategic Health Care Group. With the successful deployment of Cheyenne's Telemental Health program, two years later, Jeff was appointed to the new position of VISN 19 Telehealth Coordinator.

Six months into his new job, Jeff has gained much perspective on the challenges of his new position. Impressively, he's also experienced noteworthy successes. Here's a little more about what I learned from Jeff:

Jeff's Approaches to a New Frontier

Jeff defines what he is doing in VISN 19 as Frontier Telemedicine. This term relates to the population density, geographic, and climate conditions prevalent in the Rocky Mountain region, which present challenges not necessarily evident in telemedicine

development in urban and rural areas. Because the VISN Telemedicine Coordinator Position was newly created, the details of its function needed to be defined from scratch. Jeff recognized this as both an opportunity and a challenge. The overall goal of the position was to develop and implement a VISN-wide telehealth program—a daunting objective replete with unknowns. Jeff embraced the challenge and assumed multiple roles to achieve his goals. These roles included: Marketer, Educator, Program Developer, Policy-Maker, Liaison to Technical Staff, and sometimes Technician. He started by marketing, planting the seeds of possibility, beating some bushes (sounds like a gardener), and educating administrators and clinicians about the potential of telehealth. Specifically, Jeff has given presentations, developed the VISN-19 telemedicine web page, and worked on establishing both standards for telehealth practice and methodologies for evaluation of telehealth programs. To his benefit was his experience as the Telemental Health Coordinator for the Cheyenne VA in which he had dealt with the myriad of clinical and technical issues associated with launching and sustaining a telehealth program. He was able to continue his effort with developing a home telehealth program and to build upon that groundwork throughout the VISN.

Initially, a difficult aspect of the

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job for Jeff was the top-down nature that came with the mission of creating a VISN-wide program. He realized that successful telemedicine was born of a clinical need, grassroots efforts, and a bottom-up evolution. Given this knowledge (in the face of his job mission), Jeff's marketing and education efforts were vital; they served to ignite an interest in telehealth among clinicians and administrators who recognized the possibilities of telehealth for clinical care. Once people were educated and knew that they had a resource in Jeff, a nucleus of people began to create telehealth programs.

Jeff shared his perspective on his greatest successes, frustrations, and what he has learned in his brief tenure in his new position. They are as follows:

Success: 6 months into the job….
§ His greatest accomplishment is that the network's telehome care pilot program has been serving between 75-100 patients since last July and is steadily growing.
§ Every site in VISN 19 is either initiating a new home telehealth program or expanding an existing program; soon there will be 6 sites up and running.
§ Planning is underway for the deployment of several new telemedicine initiatives.

Frustration (or Challenges):
§ Limits in resources, related both to funding and personnel His advice: apply for grants; build partnerships; take initiative; be creative.

Knowledge Gained:
§ Technical—networks and networking issues; access/ networking within and across the VISN to provide telehealth services is an essential building block.
§ Successful telemedicine is people driven, not technology driven.
§ Careful and thorough planning, with the involvement of clinical as well as technical personnel, is necessary to successful telemedicine development
§ The importance of an available clinical champion/coordinator cannot be over emphasized

Finally, Jeff stressed how much he really loves his job and how fortunate he feels to be doing what he is doing. He feels very strongly that telemedicine will have an increasingly more important role, not only in VISN-19 but also in the national VHA patient care delivery system. He is more than willing to help any program with information and encourages any and all individuals with questions or concerns to contact him by email or phone.

> *"His greatest accomplishment is that the network's telehome care pilot program has been serving between 75-100 patients since last July and is steadily growing."*

Relax…
By David Gratz

"Relax… its informal high tech." Isn't this the way we would like our telemedicine patients to feel when they walk into a telemedicine encounter? This quote is from a patient who reported a very satisfying telemedicine experience. *"What was one of the key factors in making it such a satisfying experience?"* Answer – *AWARENESS and UNDERSTANDING!* Today I'm writing this article, which offers more of a patient perspective, but I promise to get back to some more technology issues in future articles. So many exciting things are happening in our VISN (VISN 8) today, that I want to share a piece of that with you—one of our "discoveries."
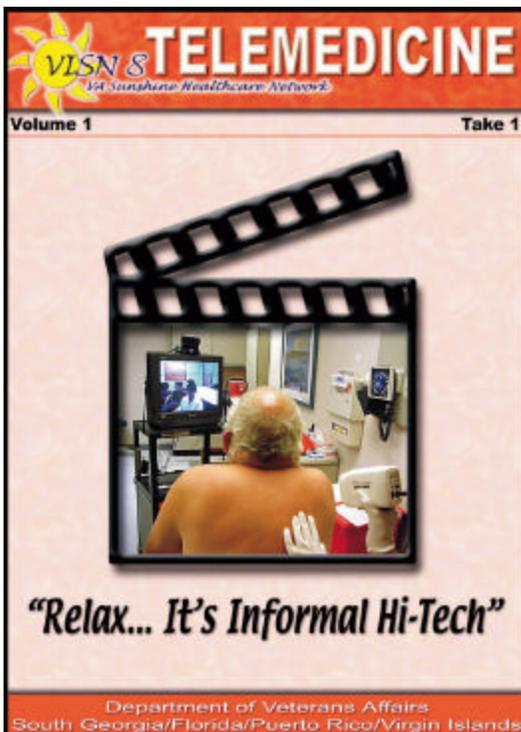
We just produced a great information brochure to provide information to our patients before they come in for their telemedicine visit. You probably have another question, *"What's so great about an information brochure?"* Answer –*It is integrated into the system so patients* *are guaranteed to receive it in a timely manner and they get the information directly from the source.*

The patient brochure is one of the recent artifacts of a research study we began a year ago with a research team from the University of South Florida headed by Cynthia LeRouge. Data collected from patient focus groups and open-ended surveys during the course of the study made it apparent that many patients were not aware that they were going to have a telemedicine exam prior to the encounter. Also, many that were told they were going to have a telemedicine exam did not really understand "what they signed up for."   It became increasingly clear during the research process that non-existent or scanty information could seriously compromise the quality and objectives of the encounter. We wanted to ensure that our patients indeed are receiving the informed consent that we thought they were getting and should get—before the session. We needed to do something different to reach the patient in his terms. As explained by one patient:

> *"Well, if it's a person that's not used to technology, it should be explained in depth what's going to be because it'll be scary to somebody. If you don't have a web cam on your computer or you're [not] used to talking into a camera or looking at* *somebody on television, you're liable to be a little bit confused... If you're going to do the telemed thing, perhaps a little brochure could be made up to send out to the patient so that they could get the layout. I walked into the room; I'd never seen the room. I mean, I didn't know whether it was a monitor, whether it was a fake camera with an operator with a headset..."*

Another patient described the embarrassment he felt when he was corrected for yelling in order to be heard. He stated he felt awkward during the rest of the encounter and did not want to say much. In using a technology that depends upon verbal as well as visual communications, we need our patients to be engaged in, and aware of, the process.

The information and metaphor for the brochure came directly from the focus groups, open-ended patient surveys, and interviews with various providers conducted as part of the study. Patients told us what they would like to know, especially before the first encounter, and we tried our best to listen. It seems many patients relate the telemedicine experience to being on "TV." To prove this point, I was recently at one of our CBOC's to assist the local provider with a new Neurology telemedicine clinic. We used a patient who had already been seen by the distant provider. He was told that this time he was going to be on TV and—to my delight and surprise—he showed up in a tuxedo ready for "cameras, lights, and action!" He looked like Fred Astaire

Continued

Relax…
By David Gratz

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and was great to work with. We did have a bit of a hard time getting him to remove his jacket, which he felt gave him "star polish." A light bulb went off and we decided to capitalize on this positive connection made to the all-American Hollywood theme. So, we designed our brochure with a "movie script" feel and have used the theme of "You're a star in your own show" in promoting telemedicine to veterans.

So, how do we deal with the daunting task of distribution? We designed a system, with our Chief of MAS, Dawn Proto, to include the brochures with the appointment envelopes so the patient has enough time to digest the material. If our patients have knowledge in advance, it will reduce the fear factor and promote an even more successful encounter.

There are two big messages for telemedicine endeavors in sharing this story:

1. Sometimes it's the little things that make success.
2. Our Vets are special people and telemedicine is a way to make them feel extra special.

A copy of this brochure will be available soon on the VISN 8 web site. If you just can't wait, contact me at David.Gratz@med.va.gov and I will send you a copy. Also, if you would like to find out additional information about this research, which involves exploring multiple dimensions of the quality of the telemedicine encounter (i.e. critical

success factors), also e-mail me.

In the spirit of patient education, Dr. Adam Darkins, Chief Consultant for VHA Telemedicine, has potential plans to include information such as the brochure described on an internet site, which all patients could access for telemedicine information. I think this is a great idea and I'm sure he will let you know if and when this happens.

I have to finish this up with two additional acknowledgements. First, thanks to Dr. David Law, who has put in countless hours going through transcripts to provide the "VA Provider" side of things. Second, thanks to West Palm Beach VA for doing our layout and printing for our brochure!

Oh…one last thing about another exiting event in VISN 8 that is further propelling telemedicine forward. The VISN has appointed an Inter-Facility Coordinator and has mandated the hiring of site telemedicine coordinators at all the major hub sites. This move demonstrates the commitment of our VISN Director to provide the broadest range of care to our veterans in this region. By the way, I am now the guy with the weight of the Inter-Facility Coordinator position on my shoulders, which brings me to my new "telemedicine mantra" – Relax… it's informal high tech; it will be O.K. Relax, it's informal high tech…

> **"*If you don't have a web cam on your computer or you're [not] used to talking into a camera or looking at somebody on television, you're liable to be a little bit confused…*"**
> **—*A patient seen via telehealth***
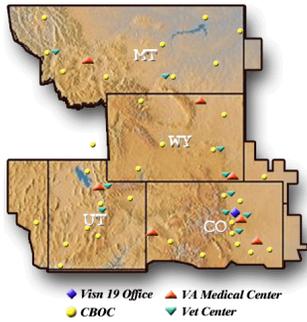
Frontier Telemedicine in the Rocky Mountain Network

By Jeffrey R. Lowe, M.S.W.

Geographic, climate and population features of the Rocky Mountain region have presented unique challenges and opportunities for telemedicine development in VISN 19. The Rocky Mountain Network is, geographically speaking, the largest VHA network in the contiguous United States. It covers more than 450,000 square miles across four complete states (Colorado, Wyoming, Utah, and Montana) and portions of five other states, (Idaho, Kansas, Nebraska, Nevada, and North Dakota). This area includes nearly one-third of the nation's parks and recreation areas.

Extremes in climate, from high mountain areas to the arid deserts of the southwest, to the plains adjacent to the Canadian border are characteristic of the network and it is not uncommon for major roads to close on a moments notice, throughout a significant portion of the year.

Given this large geographic area, the veteran population is widely dispersed. Of the 195 counties in the network, 149 have a veteran population of less than 2,000. One hundred and seventy (170) counties have a veteran population of less than 5,000.

Serving veterans in this large and geographically diverse area are three medical centers, located in Cheyenne, Wyoming; Sheridan, Wyoming and Grand Junction, Colorado as well as three major health care systems: VA Montana; the Salt Lake City HCS and the newly integrated Eastern Colorado HCS (ECHCS), which is composed of the former Denver VAMC and the Southern Colorado HCS,(SCHCS). There are also 31 Community Based Outpatient Clinics (CBOC) within the network.

Telemedicine Development

It would seem to make sense that, given the frontier nature of a significant portion of the network, the use of telemedicine technologies to enhance linkages between veteran and services would be a "no brainer." And, on the surface, telemedicine as a means to reach these veterans is an attractive idea. The devil, of course, is usually in the details and particularly so with frontier telemedicine planning. Communications infrastructure in outlying areas is frequently primitive and very limited. Most communities do not have ISDN or fiber optic capabilities. The very low numbers of clinical encounters make it difficult to justify start-up and maintenance expenditures. In short, the economies of scale that might be enjoyed in rural and urban telemedicine applications are frequently not available for frontier applications.

Planning therefore requires the use of creative solutions using sharp budget pencils. Feasible strategies might include the formation of partnerships with other organizations, e.g. state governments, non- profit and for-profit agencies, vet centers, and other federal agencies, in order to spread costs and increase efficient use of facilities, manpower and technologies. Another smart strategy is using pilot projects to "test bed" applications and study clinical/cost outcomes before making the commitment to full-scale deployment.

Even with a well-conceptualized and efficiently run program, the most successful applications typically do not yield the impressive "numbers" with regard to clinical encounters and total dollars saved (particularly when compared to rural and urban programs).

Regardless of the challenges, attention must be paid to the basic success formula for any telemedicine program:

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strong clinical representation in the design phase and advocacy in the implementation phase, applications designed around service delivery rather than technology, strong cost/benefit analysis, and attention to outcome measures.

Despite these challenges, several telemedicine applications are currently operating effectively within the Rocky Mountain Network, due largely to the efforts of pioneering individuals who have had the foresight and resolve to overcome the formidable obstacles.

Wide Area Network

The network's information technology leaders, particularly Anthony Salas, Wide Area Network Manager and Jack Seymour, VISN 19 CIO have, in recent years taken an aggressive position with respect to development of voice, video and data communications infrastructure. This has been an essential contribution to the development of our telemedicine program. Asynchronous Transfer Mode (ATM) is now fully operational within VISN 19. ATM allows for simultaneous transmission of video, voice and data on one medium (fiber optic, wireless, and copper-based), resulting in dramatic reductions in operating costs through elimination of homogenous systems. The ATM network is able to provide needed telecommunications capacity on demand, which adds to its flexibility and scalability. This has enabled broadband connectivity between all facilities, which, in turn enables VISN 19 to have the capability of H.323 video protocols throughout. Further, VISN 19 has installed Polycom H.323 videoconferencing units at most facilities with a stipulation that telemedicine applications receive a priority. These videoconferencing units are capable of 768 MHz, 30 frames per second video quality.

Telemental Health

Historically, the first clinical uses of telemedicine in Network 19 occurred in Cheyenne, in 1997 with the establishment of telepsychiatry link between the Cheyenne, Wyoming VAMC and Vet Centers in Ft. Collins, Colorado and Scottsbluff, Nebraska. The ongoing success of this program was made possible by the vision and tenacity of three individuals—Joe Pugliese, M.S.W., Business Development Director, Roger Johnson, M.D., Chief of Staff, and Chuck Mueller, M.S.W., Vet Center Team Leader—all located in Cheyenne. The project was the first joint VA/Vet Center telemedicine application in the nation.

Since that time the use of telemedicine technologies for the provision of mental health services has spread to most of the facilities in the VISN. In 2000, the Cheyenne program expanded to include service delivery to veterans in

Roger Johnson, M.D., Chuck Mueller, M.S.W. and Joe Pugliese, M.S.W., VISN 19 Telepsychiatry pioneers

Greeley, Colorado and Rawlins, Wyoming. System has aggressively pursued a ensuring that each site in the system is conferencing unit. The flexibility of the example, telepsychiatry sessions between as well as between the Billings CBOC and Sheridan, WY VAMC has been providing four of its CBOC's in Casper, Riverton, Wyoming. The Salt Lake Healthcare telemental health links between the Salt Idaho CBOC and the St. George Utah services on a regular basis. The Montana Health Care telepsychiatry initiative by equipped with a video system has allowed, for Fort Harrison and Kalispell Miles City CBOC. The telepsychiatry clinics to all Powell, and Gillette, System in Utah has Lake facility, the Pocatello, CBOC and is providing

Typical services provided in the aforementioned applications include: psychiatry, medication management, and

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supportive psychotherapy. Other uses have included group therapy, individual psychotherapy, supervision and case consultations between clinicians, and staff meetings.

Another exciting and innovative project has been designed by Spero Manson, Ph.D. and Jay Shore, M.D. of the University of Colorado Health Sciences Center. They have developed a unique program in partnership with the Eastern Colorado Health Care System (ECHCS), Hot Springs, South Dakota VAMC, Rosebud Indian Health Services, and Rosebud Tribal Veterans Center in South Dakota to provide services to Native American Veterans suffering from Post Traumatic Stress Disorder (PTSD). Currently, Dr. Shore is running a weekly five-hour telemental health clinic out of ECHCS to the Tribal Veterans Center in South Dakota. His services include intakes, medication management, interventive therapy, and a weekly PTSD support group, all over videoconferencing connections. The program began services last spring and planning is currently underway to expand the program to Native American populations in Wyoming, Montana and Utah.

Additionally, during this quarter, the Sheridan VA will bring a new project online. They are working in cooperation with the State of Wyoming Department of Health to provide telemental health services to veterans residing in the Wyoming Veterans Home, in Buffalo, WY, a state run assisted living facility. We anticipate that this connectivity will allow for development of other telemedicine applications at the Sheridan VA.

Jan Anderson, R.N., Telecare Coordinator monitors patient status using a web browser

Telehome Care

Dr. Ken Maffet, Chief Medical Officer for the network and a VHA national leader in the field of telemedicine, has been a strong advocate for telemedicine development and a major reason for the growth of the VISN-19 telemedicine program.

In 2002 Dr. Maffet asked facilities to submit telehome health proposals and in July opted to fund the initial start-up costs to deploy the Health Hero Platform. Health Hero is a technology featuring in home patient monitoring capabilities on a network wide basis.

Utilizing this relatively low tech but highly effective tool for management of chronic disease, four facilities within the VISN are participating in a pilot program focusing on management of chronic disease and serving 100 veterans. Specific diagnostic categories were selected for the pilot, including congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), and depression.

The telehome care program's mission is to improve overall care to these veterans, while reducing inpatient admissions, polypharmacy and unscheduled ambulatory walk-in visits. With the technology, telecare managers have monitored patients on a daily basis while educating them to better self-manage and understand their chronic condition. The result is better services and improved quality of care.

At present the program is being expanded to include all of the facilities in the network. Three new disease states are also being considered to be included in the expansion plans; these are diabetes, hypertension and bipolar disorder.

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Teleradiology

Utilizing the ATM wide area network, VISN 19 is in the third of a four-phase development process to implement a state-of-the-art teleradiology program with a Picture Archiving and Communications System (PACS) () at the ECHCS Denver facility and the SLHCS Salt Lake City facility. In addition, the Montana Healthcare system has pursued a similar program based on VISN standards. Elliot Sandberg, M.D., Chief of Imaging at the ECHCS VAMC and Greg Weber, PACS Administrator, have been driving forces behind VISN 19 teleradiology development.

The program was chosen and modified based on user driven mandates with the primary commitment focused on improving access to imaging subspecialty expertise—not just within the networks' tertiary care facilities but also the Rocky Mountain Network as a whole. Dr. Sandberg has emphasized that the involvement of clinical providers who defined their needs was a critical part of the program development. These defined needs were met by creative solutions by the manufacturer. He reports that he has:

> *"been particularly gratified by the 'conference' mode unique to the PACS, which encourages referring providers and radiologists to dialogue and directly interact while viewing common images on their respective PC's. The challenges of distance and isolation are substantially bridged by this valued attribute. Subspecialty conferences can be modulated in a similar fashion. We routinely utilize the selection of summary series to facilitate clinical access to critical diagnostic images. This attribute when matched to a completely integrated voice activated transcription cements an intimate link between the clinical provider and Radiologists throughout our network."*

An effective PACS/teleradiology program cannot thrive and evolve with respect to changing clinical needs without dedicated and in-depth support from the manufacturer. The successful ongoing relationship with AGFA Medical, the chosen vendor, has emphasized this point throughout this effective partnership. The system has exceptional capabilities with respect to teaching and archiving options.

The Sheridan VAMC, located 427 miles north of Denver recently invested in several high technology imaging devices and have been engaged successfully with the Denver based PACS. According to Dr. Sandberg, "we have been genuinely gratified by our strategic imaging partnership with the VAMC in Sheridan. Our maturing relationship with dedicated providers and administrators has been built on a robust technical platform matched to a personal commitment to clinical service." He also stated, "our flexible teleradiology program will be expanded in the near future to service joint ventures between the VA and the DOD within the State of Colorado. The critical need for qualified staff within both systems offers the opportunity to co-venture within numerous subspecialties to include imaging."

In August 2000 The Montana Health care system also implemented a PACS that is located at the Ft. Harrison VAMC. X-rays are taken at the Billings CBOC by a Radiology Technologist who then digitizes the images and transmits them over the data network to the medical center at Fort Harrison. Radiologists at Fort Harrison read the images on a viewing station and input the notes into the computerized patient record system. The digital images are permanently stored electronically for future use.

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Spinal Cord Injury

The Montana Healthcare System has also been engaged in a pair of telemedicine initiatives with VISN 20. The Spinal Cord Injury (SCI) application is based on a "Hub and Spoke" network in conjunction with Seattle and VISN 20. The chosen system for this initiative utilizes a personal computer (PC) and videoconferencing network to connect patients at the Fort Harrison VAMC with specialized care at the Seattle VAMC. The patient and a Fort Harrison SCI team member can utilize the system to conduct video conference calls with Seattle and/or send digital images for SCI team members in Seattle. The Seattle SCI experts assist the team at Fort Harrison with the patients care. These transmitted images can then be attached to the electronic medical record in both Seattle and Fort Harrison.

Digital retinal image
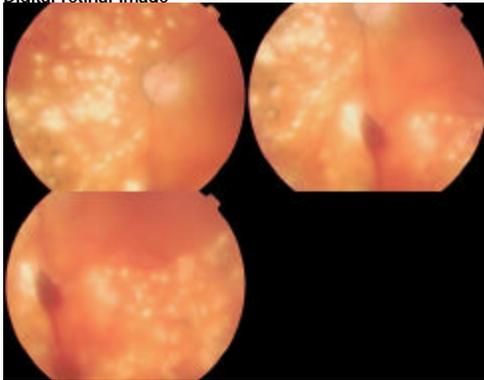
Teleophthalmology

The second telemedicine venture in cooperation with VISN 20 has been the use of the Joslin Vision Network, a standards compliant, extensible PACS. The program goal is to provide diabetic veterans in the Montana Healthcare System with access into quality eye care regardless of cultural or geographic barriers. It is comprised of an imaging system that allows the acquisition, storage, and retrieval of retinal images. It also has a diagnostic subsystem, which allows for the recording of findings and, through proprietary algorithms, the generation of diagnosis, treatment plans, and customizable imaging reports.

Wound Care

Ellen Sanders, RN, BSN, CWS, CDE, of the Sheridan, Wyoming VAMC has spearheaded an effort to use digital imaging to enhance the treatment of wounds. Utilizing digital cameras, clinical staff located at Wyoming's CBOC's capture JPEG format wound images, which are transferred to the Sheridan VAMC as email attachments or attached to the medical record in CPRS. This store-and-forward methodology allows clinicians at the main facility to follow the course of the patient's medical treatment more closely while sparing the patient the need to travel long distances. This application has also been used to enhance the consultation process for wound care between clinicians inside and outside of the VA. Some specific patient case examples include:

- A patient in Sheridan who had cancer of the face.: Images were sent on a weekly basis to plastic surgeons in Denver for treatment planning, which saved the patient weekly trips and related costs.
- An SCI patient needed a flap revision. Images were sent to SCI centers so they could determine a course of action without necessitating patient travel for evaluation.
- A polio patient on permanent ventilator status who needed surgery.. Rather than send the patient immediately, images were sent for evaluation by SLHCS, Salt Lake City facility.
- A patient with a plethora of polyps found by colonoscopy. Forwarding of the digital images of the findings immediately to a cancer surgeon facilitated a expeditious surgical workup and treatement.

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More Teleophthalmology

Spearheaded by William Berryman, M.D., Chief of Staff at the Grand Junction VAMC, the VISN 19 teleophthalmology application was created to improve the network's efficiencies with screening for diabetic retinopathy. Using a nonmydriatic digital camera, VA staff members are able to capture multi-view images of patient retinas. The images can then be diagnostically read by optometry professionals at originating facility, or electronically transferred to a tertiary facility, where an ophthalmologist can view them. In the case of the Grand Junction VAMC, a contract ophthalmologist, who also provides follow-up care as necessary, views the images.

Cameras have been placed at several network facilities and another benefit of the program has been the improved consultation/communication process between Optometrists located a various network facilities and ophthalmologists at the tertiary facilities.

Planning is currently underway to expand this program.

Conclusion

For the most part, telemedicine development in Network 19 has occurred over the last five years. The success and durability of the aforementioned programs can be traced back to a few common threads:

- A clinical champion or strong advocate behind the program from the planning stages through implementation;
- Application planning that is centered around patient care/service delivery rather than technology;
- A strong business case which clearly delineates the benefits, both clinically and financially; and
- Creativity in planning with respect to the development of partnerships and the use of pilot test bedding.

The network administration recently reaffirmed its commitment to the development of effective telemedicine in VISN 19 by creating a permanent telemedicine coordinator position. Primary responsibilities of the coordinator include:

- Assisting clinical, administrative and technical personnel with
    - o Planning and development of new applications,
    - o Development of effective evaluation methodologies,
    - o Facilitating communications,
    - o Providing education and training,
- Establishing standards for equipment and technologies;
- Coordinating the development of policies and procedures which ensure compliance with national VHA directives and accrediting entities, and
- Coordinating with VISN-19 technical personnel to maximize use of existing infrastructure.

The Rocky Mountain Network: large, geographically diverse, featuring extremes in climate conditions and sparse population... wonderful opportunities and significant challenges for telemedicine development.
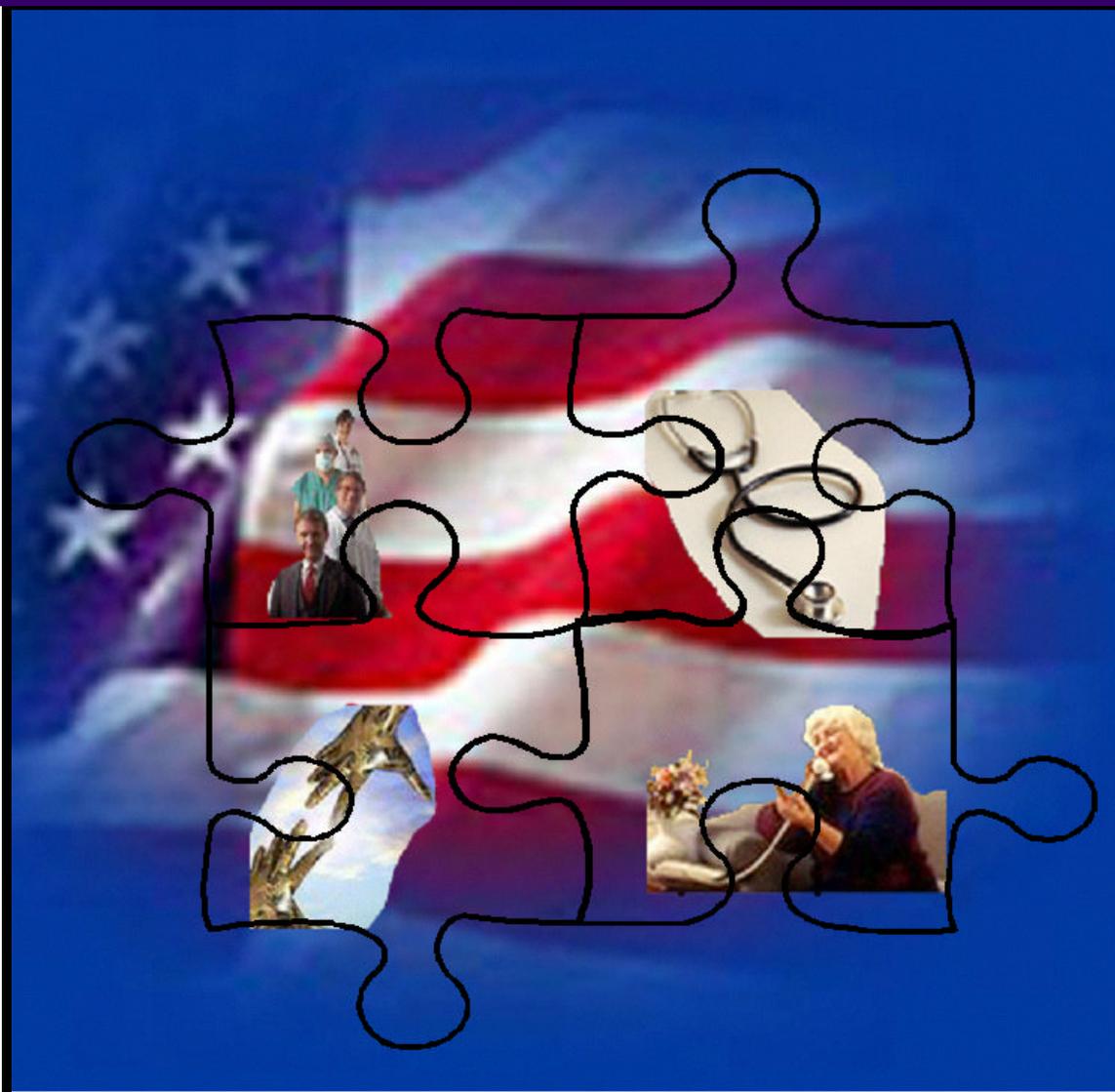
The mission of this newsletter is to serve as a conduit to share information, strengthen resources, and promote community for telemedicine within the VHA and with the goal to provide the best quality of care to our patients despite the barriers that distance may impose.

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