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VA USE OF TELEMEDICINE IN PROVIDING CARE TO VETERANS

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Mr. Chairman and members of the Committee,

Thank you for the opportunity to appear before you today to present testimony on and demonstrate how the Department of Veterans Affairs (VA) is using telemedicine in the care of our veteran patients. VA makes extensive use of telecommunications in the practice of medicine. For the purposes of this hearing, we will be describing a range of VA activities and plans that touch on the practice of health care delivery, diagnosis, consultation, treatment, and transfer of clinical, administrative and educational data using audio, visual and data communications among facilities.

The use of telemedicine is having a major impact on the VA approach to health care. A patient away from home can now be sure that his or her doctor has access to all the information necessary to provide quality care. A patient with an atypical or complex case can obtain the services of the best specialist in the field, even if that patient is in a rural area. Today, the focus of health care delivery is changing from the individual care provider to integrated health care delivery networks. Telemedicine is the key to making this transition. Telemedicine techniques can even allow us to go into the patient's home, something VA has been doing with Cardiac Pacemaker monitoring for over ten years.

Introduced in 1982, the Cardiac Pacemaker Surveillance System was one of the first uses of telemedicine in VA. This system has provided a valuable service to our veteran patients, allowing them to dial in to two Surveillance Centers from their home telephone and transmit their pacemaker tracings for analysis. Today, the Centers actively monitor more than 10,000 patients. This information is systematically collected and used to detect problems and define patient risk and frequency of followup calls. This method of following patients has been confirmed by the absence of any preventable pacemaker problems in our treated veterans. There has never been a pacemaker generator failure in the duration of the Centers.

Today, VA medical centers use a broad spectrum of telemedicine techniques, showing tremendous innovation at the facility level. VA medical centers have

found many uses for "low-tech" telemedicine applications such as patients using the telephone to contact staff or automated response systems. The relatively low cost and the enthusiastic acceptance by patients and staff have led to many sites using these technologies. Higher technology applications, such as the transmission of radiological images and electrocardiogram readings for diagnostic interpretation by staff located at another VA facility, are the most frequent use of telemedicine in VA. New and innovative techniques, some of which are being developed in VA, are being piloted and researched to determine how they can best be used in VA health care setting. Examples of these innovative techniques are networked imaging and videoteleconferencing.

Mr. Chairman, I would like to describe some of the general benefits attributable to telemedicine, and place telemedicine activities in the context of changes coming under health care reform. Next, I will talk about VA's role in several multi-agency initiatives currently underway, and VA's current strategy for developing and encouraging the use of telemedicine. Finally, I will demonstrate several specific examples of current uses of telemedicine.

Telemedicine provides many benefits to VA patients. The clinical information available at the time of treatment is greatly increased. This expansion of the provider's information base reduces the number of repeat studies required for referral patients, greatly adding to the comfort of the patient, reducing costs, and improving timeliness.

There are many benefits associated with using telemedicine over VA's national and local networks. We will be able to assemble a treatment team to provide the best care for the patient, without regard to patient or provider location. Having specialty consultation available at any location within the VA system and affiliates will significantly reduce patient travel time and expense incurred by repeat visits and travel to obtain specialty tests and treatment. Centralized locations within the VA can provide off-hours coverage when needed for specialties such as radiology and nuclear medicine. The patient receives greater continuity of care and is able to get the best in specialty treatment without limitations to provider location.

Telemedicine shows great promise of benefits in the areas of patient and provider education, as well as clinical consultation. It allows us to better serve our veterans in rural areas. VA is sponsoring initiatives that encourage sharing information, educational, and scarce health professional resources to meet the needs of health care professionals located in isolated rural communities. Telemedicine brings the remote provider in closer touch with the broader medical community. Using these techniques to provide expert advice can also enable physicians' assistants and nurses to provide a greater range of care at remote sites. Telemedicine may allow us to extend health care benefits to the veteran in the home and decrease or eliminate the need for travel to a VA medical center.

Telemedicine experience is one of the competitive advantages VA brings to Health Care Reform. The future under Health Care Reform will not be in free-standing health care institutions, but in integrated health care delivery networks, which cover the entire continuum of care from in-home services to tertiary care. VA must position itself to share integrated patient information within its own environment, as well as across service providers. In whatever setting care is given, we must be able to collect and store administrative and clinical patient information, and give access to appropriate health care providers. Patient information should be captured at the time of the first encounter, be it the doctor's office, outpatient clinic, or the patient's home, and then communicated across providers and geographic boundaries.

VA has begun the process of creating networks to exchange health care information among VA facilities and other providers. These networks include local Community Hospital Information Networks, as well as a nationwide network. VA has also developed a standard method of exchanging patient data among all VA health care facilities.

Telemedicine will also greatly enhance our ability to exchange data with networks of health care providers under the Health Care Reform model. The VA medical center, the community-based clinic, the affiliated medical school, the specialist with the needed expertise for the task at hand, the medical record, and most important, the patient -- all can be brought together at the point of need. As health care providers cooperate and search for cost-effective solutions, telemedicine will play a vital role in facilitating data exchange and integration to provide a complete, clinically-relevant picture. VA has an advantage in implementing telemedicine technologies because it is the largest health care network in the country with ten years of experience in exchanging data among hundreds of medical facilities and central data repositories.

Mr. Chairman, the National Information Infrastructure will mean that facilities outside the VA will be available for VA consultation, just as easily as VA sites are today. Communications will be faster and better, more data can be sent, and higher resolution images, and perhaps video images, may also be included in the information shared among sites.

VA is in an ideal position to serve as a testbed for telemedicine activities for the National Information Infrastructure due to a strong communications infrastructure, experience in transferring data among facilities , and an enthusiastic, innovative staff. The foundation of VA's communication is the electronic mail system at every VA medical center. VA-wide these electronic mail systems have over 100,000 users. The VA has established a standards-based electronic network that connects all VA medical facilities. Secretary Brown uses this network to send a daily message to all employees. Traffic on this network is approximately 75 billion characters per month (approximately 150 million pages of text). Through this network, VA has established a connection with Internet for mail, and will

soon be able to transfer files as well. This feature enables clinicians and researchers to confer electronically with colleagues in federal agencies, medical facilities, and academic settings across the nation and around the world. VA also has an electronic teleconferencing resource with 36,000 active users and 16,000 sign-ons per day.

VA has extensive experience in the transfer of data, both in administrative and clinical areas. For example, procurement can be accomplished electronically by any VA user from order through delivery to receipt and vendor payment. We also exchange a large volume of clinical data, including patient care information, diagnostic medical imaging, and multimedia data, among VA health care providers. VA is presently testing frame relay technology at several VA medical centers. This technology will greatly increase the speed at which medical images can be transferred, and may have a large impact in videoteleconferencing in the future.

VA has been a forerunner in the development of standards-based links between systems. About one year ago, at the Baltimore VA Medical Center, we installed a link between the Siemens-Loral commercial radiology imaging system and VA's hospital information system, the Decentralized Hospital Computer Program. This link was specified and created by VA working with Siemens-Loral. This is the first link in the world that uses health care standards to exchange text and image information between a hospital information system and a Picture Archiving and Computing System (PACS), and marks the first time these standards have been mapped to each other. This link overcomes a major obstacle to telemedicine information exchange on the information superhighway.

The general pattern we have seen in VA telemedicine implementation is for two VA facilities to establish a telemedicine link. After that link stabilizes, the network begins to extend outward, adding other VA facilities, satellite care facilities, or medical school affiliates. VA has an installed base of computer hardware and software in a wide variety of clinical settings, large and small, primary and tertiary care hospitals located in urban and rural settings. Downlink satellite dishes at each of the 171 medical centers currently serve as distribution points for educational video programs and time-critical administrative communications and may have other telemedical uses in the future.

VA is discussing the cooperative use of telemedicine with Federal agencies, including the Department of Defense (DoD) and the Indian Health Service. VA is working with DoD to create a common connection between our respective health care information systems and those offered commercially. We are developing plans to provide a link between VA Medical Center American Lake, WA and the DoD Medical Digital Imaging System at Madigan Army Medical Center, WA. This same initiative will be used to link the DoD Composite Health Care System to the Medical Digital Imaging System (the commercial radiology system manufactured

by Siemens-Loral). DoD has contracted with VA to supply a copy of the VA link at all of DoD's Medical Digital Imaging System sites.

VA is currently active in many Federal decision-making and policy groups:

- VA is a member of Health Care Applications and the Health Applications' Telemedicine subgroup under the Committee for Applications and Technology, under Vice President Gore's Information Infrastructure Task Force.
- VA is an observing member of the High Performance Computing and Communications Information Technology committee under the Executive Office of the President, and is working towards becoming a full member.
- VA serves on the National Library of Medicine's Board of Regents. This provides an opportunity for cooperation and sharing of information concerning telemedicine, development of the computerized patient record, and advances in the delivery of health sciences information.
- VA is assisting other agencies such as DoD's Advanced Research Projects Agency and the Department of Commerce in their health care grant review process which fosters cooperation between VA and other Federal agencies in the field of telemedicine.

Currently, VA has cooperative telemedicine projects with many non-Federal agencies and organizations, both in this country and abroad. These include local initiatives with affiliated medical schools, and the States of West Virginia and Washington.. West Virginia Consult is a cooperative project between VA and the State of West Virginia. The State has installed VA's Decentralized Hospital Computer Program at a central location, with VA support. Health care providers, including doctors and midwives, can use VA electronic mail and the VA communications network to keep in touch with each other. The State has developed a number of applications using VA tools, such as pharmacy alerts and literature searches, and training schedules, which help to bring the West Virginia rural health care system together. We are in the initial stages of connecting the VA Medical Center Clarksburg, West Virginia with the West Virginia Mountaineer Doctors Television program. Mountaineer Doctors Television is a two-way interactive audio and video network that links rural hospitals for telemedicine and educational purposes.

VA and the State of Washington are planning for the five Washington State VA medical centers to band together to form their own health plan network. Sites will be able to freely exchange patient information. Private providers will be able to access this data through dial-in capabilities and receive health summary, scheduling, and other clinical data.

VA has many opportunities for expanded sharing of telemedicine initiatives with Federal and non-Federal partners. There are a great number of other telemedical applications where centralized reading and interpretation of clinical results could

benefit remote clinics or medical center consortiums that are being formed to meet the medical needs of today. VA's transmission of prescriptions to a centralized location for remote processing, called Central Mail-Out Pharmacy, will result in economies of scale and streamlined service to the patient.

Telemedicine implementation costs are quite variable, and highly dependent on the complexity and volume of usage. The cost for a basic voice response system may be as little as $25,000, while setting up a regional teleradiology network could cost $500,000 or more. We believe that the benefits telemedicine offers will far outweigh the costs when the right technologies are matched to the right needs.

Several obstacles remain to the further use of telemedicine today. In order to fully realize the benefits of telemedicine, standards for connecting different systems must be developed and used. Without standards and a directed effort to create a common network for telemedicine, hospitals will divide into small groups that can teleconsult with each other but not with those outside their group. This would represent a tremendous loss for U.S. medicine, as each group would be dependent on the vendor of their non-standard system and patients would not benefit from the wider availability of specialists and competition in the marketplace.

Another obstacle is that the technology itself continues to change rapidly, and today has some restrictive limitations (such as bandwidth). There is also a need for greater partnering between VA and private industry. Reducing the complexity of contracting out and establishing a private-Federal partnership would allow us to work together with industry in pursuit of standards and solutions to these highly technical problems.

VA has established priorities that will not only support expanded use of telemedicine, but will result in the creation of a quality information environment at all levels. The first step in this process is to accelerate the upgrading of equipment and high capacity networking at VA medical centers. A mechanism for adding network connections must be developed that will keep pace with the demand and fill the unique requirements of each VA medical center. Two key factors are developing standards for connecting systems and exchanging information, and matching the telemedicine technology to the needs of each site. This second factor is an important consideration, since telemedicine costs can be scaled down by using slower technology to meet smaller needs, for instance, at a site where only twelve radiographs must be transmitted per day for reading at another site. In order to match the technology with medical center needs, we must make it a priority to establish a network which is able to accommodate different transmission technology between sites in the system. VA must also take an active role in Federal and private groups involved in setting standards which have an impact on telecommunications.

Mr. Chairman, this concludes my formal statement. Attached to my statement is a fact sheet about telemedicine applications currently being pursued by VA. A live demonstration will also provide you with a better understanding of how various telemedicine technologies are used together in the care of VA patients. We will be happy to answer any questions you may have during or after the demonstration.