REPORT OF THE
COUNCIL ON INFORMATION MANAGEMENT

REIMBURSEMENT FOR TELEMEDICINE SERVICES

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

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COMMONWEALTH of VIRGINIA

COUNCIL ON INFORMATION MANAGEMENT

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December 20, 1996

The Honorable George Allen
Governor of Virginia
and
The General Assembly of Virginia

Dear Governor Allen and Ladies and Gentlemen:

House Joint Resolution No. 109 (1996) requested the Secretary of Administration and the Secretary of Health and Human Resources to develop a policy for considering reimbursement for telemedicine services by state health programs.

On behalf of the Secretary of Administration, Michael E. Thomas, and the Secretary of Health and Human Resources, Robert C. Metcalf, the Council on Information Management is pleased to transmit this report on *Reimbursement for Telemedicine Services*.

Respectfully submitted,

Hudnall R. Croasdale
Director

HC/lh

Enclosure

REIMBURSEMENT FOR TELEMEDICINE SERVICES

PREFACE

Authority for Study

House Joint Resolution (HJR) 109 of the 1996 Session of the General Assembly directs the Secretary of Administration and the Secretary of Health and Human Resources to develop a policy for considering reimbursement for telemedicine services by state health programs, including, but not limited to, interactive television services, subject to appropriate standards of cost-effectiveness and quality assurance.

Work Plan

The Secretary of Administration requested that the Council on Information Management coordinate efforts as directed by HJR 109. To ensure a thorough discussion of the issues, the Council formed a committee of experts, most of whom are involved in existing telemedicine projects. Serving on the Study Committee are:

Jeff Nelson
Department of Medical Assistance Services

Dorothy Boland
Department of Information Technology

Fred Schilling
Department of Corrections

Gary Blankenbecler
Department of Health

Clyde Amburn
Department of Personnel & Training

James B. Montgomery
Central State Hospital

Carol Hampton
Medical College of Virginia, VCU

Dr. Paul Mazmanian
Medical College of Virginia, VCU

Dr. Michael Blank
SE Rural Mental Health Research Center

Dr. Roger A. Hofford
Virginia Academy of Family Physicians

Henry Smith
Cumberland Mountain Community Services Board

Dr. C. Donald Combs
Eastern Virginia Medical School

Dr. James Ghaphery
Virginia Academy of Family Physicians

Dr. Karen Rheuban
University of Virginia

Paul E. Galanti
Medical Society of Virginia

Dr. Alan Wagner
21st Century Care Systems, Inc.

In addition to those serving on the Committee, representatives of additional agencies, institutions and organizations have been invited to attend several of the meetings and give testimony on the issues under discussion. These included:

Reimbursement for Telemedicine Services

Ann Colley
State Corporation Commission

William Irby
State Corporation Commission

Margaret Dexter
Department of Rehabilitative Services

Martha Adams
Department of Rehabilitative Services

David Schwemer
Woodrow Wilson Rehabilitation Center

Leslie Hutcheson
Department for the Deaf and Hard of Hearing

Dr. Claudette Dalton
Medical Society of Virginia

Dr. Lawrence Colley
Trigon

Based on the recommendations of the Study Committee, the Council on Information Management submits its findings and recommendations for considering reimbursement for telemedicine services by state health programs.

The Committee identified three major topics which currently impact reimbursement. These include: (1) Absence of coordinated action by providers and state governments; (2) Lack of acceptance by third-party payers; and, (3) Lack of knowledge about telemedicine. In addition, certain assumptions and issues have been identified which, together, provide a framework for continuing the study.

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

Introduction

Nearly one-third of the Commonwealth's population lives in rural areas. The provision of health care to patients, who for reasons of distance or circumstance do not have ready access to medical care, presents both a challenge to the medical community and an opportunity for the use of telemedicine. The availability of telemedicine services may help rural and other under-served communities solve some of their problems in accessing health care.

Telemedicine is broadly defined as the use of telecommunications technology to deliver health care services and health professions education from a central site to distant areas. However, for purposes of this study, telemedicine means the practice of health care delivery, diagnosis, consultation, treatment, transfer of medical data and education using *interactive* audio, video and data communications.

History of Telemedicine. Telemedicine techniques have been under development for nearly 35 years. However, in the United States, with one exception, none of the programs begun before 1986 have survived. Evidence suggests that the single most important cause of the failure was the lack of a revenue stream for supporting them, and when external sources of funding were withdrawn, the programs disappeared.

The resurgence of interest in alternative health care delivery systems has been sparked by a variety of factors in the health care industry. Advances in technology that enable the transmission and remote display of images and information over digital communication pathways is a major factor contributing to renewed interest. Support for the technology is not universal, however. While it is viewed by some as a valuable tool for providing badly needed specialty care services to underserved areas and more efficient use of existing medical resources, others view it as a serious misallocation of increasingly scarce health care dollars.

Telemedicine Today

Cost-Benefit and Quality of Care. A common theme surrounding telemedicine applications is the lack of published research and evaluation data. Whether and how telemedicine affects the quality of care delivered has not yet been proven. Where rigorous research efforts have been documented, positive evaluations have generally resulted.

Telecommunications Advances. Current telecommunications costs and the need for an updated telecommunications infrastructure in some rural areas are inhibiting the delivery of telemedicine services. The recently enacted Telecommunications Act of 1996 should result in decreased infrastructure costs as competition among cable companies, telephone companies and wireless communication providers increases.

Currently, no statewide network exists to serve all of Virginia. Because of this, most of rural Virginia has slower lines with minimal bandwidth, necessitating longer and more costly transmittal times. A contract, recently negotiated by Virginia Tech, appears to open new doors for lower telecommunications costs in the Commonwealth.

Government Health Care Initiatives

Telemedicine and the Federal Government. Military telemedicine systems benefit from having an extensive communications network already established, including the latest in technology. In addition, these systems have not been constrained by licensing and credentialing regulations or reimbursement regulations.

Health Care Financing Administration (HCFA). HCFA is a federal agency within the Department of Health and Human Services, created in 1977 to administer the Medicare and Medicaid programs. HCFA has addressed the lack of definitive data supporting the use of telemedicine by funding a three-year telemedicine evaluation trial begun in October 1996, in four states (Georgia, North Carolina, Iowa and West Virginia) to gather this information. Until the results become available, HCFA prohibits reimbursement through Medicare for IATV telemedicine. Because sufficient data does not exist about the outcomes and cost-benefits of telemedicine, and until HCFA makes a ruling, health care providers in a fee-for-service environment cannot receive reimbursement for telemedicine consultations with Medicare patients.

Medicaid and Telemedicine. Medicaid law does not recognize telemedicine as a distinct service. Still, Medicaid reimbursement for services furnished through telemedicine applications is available as an optional cost-effective alternative to direct consultations or examinations, or as an element of many other Medicaid covered services. According to HCFA, states covering medical services that utilize telemedicine for example, may reimburse for both the provider at the hub site for the consultation and the provider at the spoke site for the office visit or states may also create an alternative payment methodology. At this point, Medicaid reimbursement of services utilizing telemedicine is available in at least nine states, including Virginia.

Current Telemedicine Projects in Virginia. There are a number of activities that state agencies and institutions have initiated in an effort to promote the acceptance of telemedicine in Virginia (Appendix B).

Telemedicine and Other State Health Care Services. Current telemedicine projects vary with respect to goals, organization, funding and technology.

The system in Georgia was initiated in November 1991, with an overall goal of ensuring that everyone in the state has immediate access to quality health care. Among a number of other projects, North Carolina launched the NTIA Rural ED Telemedicine Link project as a means of evaluating the use of ATM technology and its utility in telemedical applications. In Iowa, a HCFA grant (one of four) will allow evaluation of the telecommunications medium for clinical applications of telemedicine, education and information systems applications. A HCFA grant made to West Virginia is being used to enhance the level of care available at the community level and reduce the sense of professional isolation commonly experienced by rural health care providers.

Telemedicine Costs

A report prepared for HCFA found no studies that provided an adequate overview of its cost-effectiveness. While telemedicine might reduce costs in certain cases, there is also the potential that costs may increase, at least in the short term. There is also the possibility that telemedicine might lower costs to patients, but increase costs for Medicare because more people are provided access to health care. What is not known is whether real improvements in health status would offset the increase in demand for care should either occur.

Reimbursement for Services

Third party reimbursement for general telemedicine consultations has not been universally enacted and Medicare and Medicaid reimbursement for telemedicine, other than teleradiology and telepathology, is limited.

In rural areas, up to 40% of physicians patient base consists of Medicare/Medicaid patients. It is unlikely that HCFA will move ahead without a clearer understanding of all the issues before proposing a uniform reimbursement policy for telemedicine. At a time when reductions in the growth of Medicare are being proposed, there will be reluctance to initiate policies that could increase costs by increasing access to services.

Conclusion and Recommendations

In discussions of the issues surrounding reimbursement for telemedicine services by state health programs, it is apparent that there is not presently consensus among those involved in using the technology and those responsible for managing payment for services. The reluctance to support a policy for considering reimbursement is linked to a number of things, including:

- Experimental nature of the technology.
- Lack of definitive data demonstrating its effectiveness.
- Concern that a policy supporting reimbursement will expand current medical coverage to include services traditionally not covered, such as telephone consultations and facsimile transmissions.
- Concern that improved access will increase utilization and cost.

There is widespread agreement, however, on the significance of the following assumptions:

- There is statewide interest and tradition in the efficient provision of competent medical care to citizens of the State and that telemedicine can further that interest.

- If it can be demonstrated that telemedicine is cost effective in the public sector, demand will drive its use in the private sector.

- Without the assurance of third-party payment for equivalent telemedicine services, and the resolution of the barrier it creates, the full potential of telemedicine will not be realized.

Given the present lack of experience to support the use of telemedicine as a safe, medically effective set of procedures and the dynamic nature of the technology, it is recommended that a policy for reimbursement for telemedicine services by state health programs in the Commonwealth on a routine basis not be implemented at this time.

However, once these obstacles have been overcome, the following recommendations should be considered in support of the implementation of a policy on reimbursement for telemedicine services by state health programs in Virginia:

- The Legislature should recognize the practice of telemedicine as a legitimate means by which an individual may receive certain medical services from a health care provider without person-to-person contact with the provider.

- No state-funded health care service program should require face-to-face contact between a health care provider and a patient for substantially equivalent services, appropriately provided through telemedicine.

- To monitor the implementation of telemedicine in Virginia, the Legislature should consider funding health services research regarding quality, efficiencies and cost-effectiveness of telemedicine services, when provided by state and/or local public providers.

- State organizations that provide reimbursement for telemedicine should monitor and evaluate the services using accepted research methodologies. Components of such methodologies address items such as the research design, data collection approach, and the adequacy of the measures for analysis.

- The Joint Commission on Health Care, in conjunction with the Council on Information Management, should coordinate telemedicine research in the State to promote and support its use. Likewise, it should monitor the activities and decisions at the federal level to ensure consistency with State policy implementation.

II. BACKGROUND

House Joint Resolution 455
In the 1995 Session of the General Assembly, House Joint Resolution (HJR) 455 directed the Joint Commission on Health Care, in consultation with the Council on Information Management and the Department of Information Technology, to evaluate the use of telemedicine to provide better, more accessible health care to the citizens of the Commonwealth. The study concluded that: "Several important concerns must be answered before reimbursement for telemedicine is widely accepted by third-party payers." The study further recognized that: "Over the long run, reimbursement will drive the development of effective telemedicine applications."

In considering the options for supporting telemedicine in Virginia, the study recommended that "the Secretary of Administration and the Secretary of Health and Human Resources be requested to develop a policy for considering reimbursement for telemedicine services by state health programs."

III. INTRODUCTION

> *Having now come of age, telemedicine has the potential of having a greater impact on the future of medicine than any other modality...Telemedicine is, in the final analysis, bringing reality to the vision of an enhanced accessibility of medical care and a global network of health care.*[1]

Improving Health Care for Rural Populations
Nearly one-third of the Commonwealth's population lives in rural areas. Compared with urban Virginians, rural residents have higher poverty rates, a larger percentage of elderly, tend to be in poorer health, have fewer doctors, hospitals and other health resources and face more difficulty getting to health services.

The provision of health care to patients, who for reasons of distance or circumstance do not have ready access to medical care, presents both a challenge to the medical community and an opportunity for the use of telemedicine--the combined use of telecommunications and information technologies to link medical practitioners with patients for consultation.

The availability of telemedicine services may help rural and other under-served communities solve some of their problems in accessing health care. Through telemedicine, remotely located patients, such as those residing in communities with limited medical resources, inmates in isolated correctional facilities, or patients in their homes, can access health care services that are currently unavailable to them. Telemedicine also offers the promise of better health care by providing more timely access to specialists and vital medical information, benefiting all health care delivery s

Telemedicine Defined
Telemedicine is the use of information technology to deliver medical services and information from one location to another. However, there are differences of opinion

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[1] DeBakey, Michael E. "Telemedicine Has Now Come of Age," *Telemedicine Journal* 1(1) spring 1995, p. 4.

regarding what the definition should include. Most agree that it includes applications in areas such as pathology and radiology, as well as consultations in specialties such as neurology, dermatology, cardiology and general medicine. While some consider certain forms of medical education within the definition, others would exclude the use of video to transmit purely didactic classroom lectures where there is no direct interaction between student and teacher.

Telemedicine is broadly defined in HJR 109 as the use of telecommunications technology to deliver health care services and health professions education from a central site to distant areas. Research to date confirms that telemedicine can be construed to include a multi-faceted approach to providing health care, including the use of telephones and facsimile machines. The issues associated with reimbursement for telemedicine services can be more adequately addressed, however, by adopting an incremental approach and more narrowly defining the term. In addition, existing practices, in most instances, provide for reimbursement for "store and forward" systems such as image transfer, an integral part of radiology and pathology. For purposes of this study, therefore, telemedicine means the practice of health care delivery, diagnosis, consultation, treatment, transfer of medical data and education using *interactive* audio, video and data communications.

Telemedicine is a diverse collection of technologies and clinical applications. Telemedicine systems can be characterized by the type of information sent such as radiographs or clinical findings and by the means used to transmit it. Telemedicine works by instantaneously digitizing audio and video from several video cameras and microphones used at both the central and remote sites to transmit full-motion compressed video over high-speed telephone lines.

History of Telemedicine

Although telemedicine may have a variety of specific definitions, it typically refers to uses of telecommunications technologies to facilitate health care delivery. Telemedicine dates back to the 1920s, when radio was used to link public health physicians standing watch at shore stations in order to assist ships at sea that had medical emergencies. Much later came the large-scale demonstrations in telemedicine involving the ATS-6 satellite projects in the 1970s, wherein paramedics in remote Alaska and Canadian villages were linked with hospitals in distant towns or cities.[1]

Telemedicine techniques have been under development for nearly 35 years.[2] In the 1960s and 1970s, under government funding, several interactive video telemedicine projects were initiated. Under continued funding in Canada, these projects thrived. In the U. S., in most cases, the projects failed when government funding was withdrawn.

Two-way interactive television (IATV) was first employed in 1959 when a microwave link was used for telepsychiatry consultations in Nebraska. In the same year, teleradiology was pioneered in Montreal, Quebec, by transmitting telefluoroscopic examinations over coaxial cable.

In the 1970s and 1980s, limited telemedicine projects were instituted at several sites in North America. All these projects used some form of video to enhance the most basic unit of telemedicine equipment, the telephone.

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[1] Hudson, H. Communication Satellites: Their development and Impact. York: The Free Press, 1990.
[2] Perednia, Douglas A. "Telemedicine Technology and Clinical Applications, " JAMA, 273(6) February 8, 1995, p. 6.

In the United States, with one exception, none of the programs begun before 1986 have survived. Although data are limited, the early reviews and evaluations of those programs suggest that the equipment was reasonably effective at transmitting the information needed for most clinical uses and that users were, for the most part, satisfied. However, when external sources of funding were withdrawn, the programs disappeared, indicating that the single most important cause of their failure was the lack of a revenue stream for supporting them. Other stifling factors were the lack of a robust communications infrastructure in many locales and high operational costs.

More than 20 years later, the resurgence of interest in alternative delivery systems, such as telemedicine, has been sparked by a variety of tensions in the health care industry, including: competition among providers prompted by the need to become profitable, the need to reduce the cost of care, the desire to increase access to care for those who have none and the need to improve the quality of care. Advances in technology that enable the transmission and remote display of images and information over digital communication pathways are also contributing to renewed interest.

Dramatically increased interest in the field is reflected in state and federal allocations for telemedicine and related technologies which were reported to exceed $100 million in fiscal 1994-95.[1] At least thirteen federal agencies have begun telemedicine research and demonstration programs. Many states are using their own resources to build state-of-the-art telemedicine systems, some with capital investments exceeding $50 million (Appendix A). Support for the technology is not universal, however. While telemedicine is seen by some as a valuable tool for providing badly needed specialty care services to under-served areas and more efficient use of existing medical resources, others view it as a serious misallocation of increasingly scarce health care dollars.

IV. TELEMEDICINE TODAY

Cost-Benefit and Quality of Care

Telemedicine projects in the past have demonstrated the potential of telecommunication services to improve health care and reduce costs by providing patient consultations and continuing education to isolated health care practitioners. With lowered costs of related technologies and increased network services, it is likely that telemedicine could play an increased role in reformed health care, even for non-isolated populations. However, because telemedicine is an electronic means to deliver care, not a specific medical procedure, it cannot be compared with conventional care in the same way that individual procedures can be measured.

A common theme surrounding telemedicine applications is the lack of published research and evaluation data. Intensive evaluation remains to be reported on the following issues:

- Cost recovery issues
- Satisfaction issues
- Quality of care issues
- Usage issues

Whether and how telemedicine affects the quality of care delivered has not yet been proven. However, it is possible to speculate that some aspects of the electronic medical

[1] "Federal programs offer $85 million in grants for telemedicine research," Telemedicine, 2, October 10, 1994, pp. 5-6.

encounter might provide better care from the patient perspective in that telemedicine could provide faster, more convenient treatment.

For the health care provider, telemedicine can offer tools to assist in providing high quality services. The development of clinical practice guidelines for telemedicine could enable providers to deliver better care. However, whether or not telemedicine consultations improve the quality of care will only be known when the research has been done to determine patient outcomes. Where rigorous research efforts have been documented, positive evaluations have generally resulted.[1] Examples include:

- Georgia's test of 30 patients seen live and then over video showed no changes in their diagnosis between methods. Most of the patients seen (81%) were kept and treated locally; demonstrating increased revenue to the local provider, increased revenue to the consultant and decreased cost of care to the patient.

- Texas Tech MEDNET showed a savings of $1,000 per patient when the patient was treated locally instead of referred.

Technology is not considered to be a problem in the implementation of telemedicine projects. Services are delivered via satellite, interactive video services through T1 lines, and, in some cases, audiographic services through telephone lines. Of greater concern are the problems encountered with high inter LATA tariff rates and the high cost of required dedicated 24-hour transmission lines.

Telecommunications Advances

Telemedicine involves extensive use of telecommunications technology. For telemedicine to achieve its full potential, it must be as easy to use and pay for as a telephone or automated teller machine. Unfortunately, current telecommunications costs and the need for an updated telecommunications infrastructure in some rural areas are inhibiting the delivery of telemedicine services. The recently enacted *Telecommunications Act of 1996* should result in decreased infrastructure costs as competition among cable companies, telephone companies and wireless communication providers increases. With increased competition, there should be a larger array of services to select from at competitive prices. Strategic partnerships between the health care and infrastructure providers should speed the development of advanced telemedicine systems.

Until recently, transmission of a high-resolution, full-motion video signal was possible only through the use of expensive facilities, such as satellite uplinks (costing up to $3000 an hour) or microwave towers. Recent developments in digitization and data compression techniques and the availability of high bandwidth lines allow for transmission of the enormous amount of information needed to support full-motion video applications.

While the equipment costs for establishing an IATV telemedicine site remains high, ranging from $50,000 to $100,000, decreasing costs of hardware, software and transmission suggest that high-resolution, full motion IATV may soon be available at a fraction of current costs.

Until recently, enhancements have been bound up in local and federal telecommunication regulations that slow the process of network upgrades in order to keep the price of basic service low for the residential customer. By deregulating telecommunication services,

[1] Moore, Mary. *Elements of Success in Telemedicine*. Mayo Telemedicine Symposium, 1993. p. 5.

the 1996 Telecommunications Act significantly changes the regulatory framework for telecommunications services. For example, it imposes on telecommunications carriers a duty to interconnect with the facilities and equipment of other telecommunications carriers and a duty not to install network features, functions, or capabilities not complying with established guidelines and standards.[1]

Ideally, we will have a public network on which we can as easily make a data or video call as we now do a voice one. It should also greatly facilitate ease of availability to information services and reduce the expense. Thus, for example, a patient in a rural Appalachian clinic could "visit" a specialist in Richmond via a high definition video link where the shared video images are of sufficient quality to convey a sense of "personalness" in the patient-physician exchange.

For many telephone companies, the next major upgrade of the existing public network is the "integrated systems digital network (ISDN). In this network, all traffic is digitally coded which allows for more use of intelligent services as well as a substantial compression of signals so that traditional telephone lines have a much greater capacity. The advantage to the telecommunications companies is that a basic form of ISDN service does not require replacing all the existing telephone lines; it simply packs more information into them. However, new switching equipment is required, as are interface devices that connect the customer's equipment with the ISDN system. Although there was increased availability of ISDN during the late 1980s and early 1990s, there are still debates as to whether it will fully develop as the next version of the public network. It may, in fact, be leap-frogged in favor of moving to a broadband network fully capable of switching high quality video images. This may explain why there are not a large number of ISDN-based technologies for telemedical applications.

It is with interactive broadband and multimedia services that the most visible changes will occur in full scale telemedical applications. These are based on a telecommunications network with video channels having the capacity for sending digital, high definition images, combined with a wide variety of additional services. That it can simultaneously provide mixes of voice, text, graphics and moving image displays qualifies it as "multimedia."

Unlike ISDN, in creating a national broadband network, the nation's entire public network would have to be rebuilt for switched broadband. Industry estimates of the costs of installing a national broadband network vary widely to as much as a total of $100 billion. While the government is unlikely to construct such a network, industry has agreed to step up to the challenge, given sufficient incentives to do so. Constructing such a network within individual state boundaries has been undertaken by several states, including North Carolina and Iowa. In both cases, the cost proved to be so great that other states have demonstrated disinterest in adopting similar models.

Commonwealth Telecommunications. Currently, no statewide network exists to serve all of Virginia. Because of this, most of rural Virginia has slower lines with minimal bandwidth, necessitating longer and more costly transmittal times. (Table 1)

[1] Telecommunications Act of 1996, 47 USC § 153.

Table 1. Comparisons of Telemedicine Options[1]

Network Type	Speed (Bits/sec)	#Telephone Transmissions	#Compressed Video Channels	Time to Transmit *Britannica*	Cost
Digital telephone line (DS-O)	56Kbps	1	1	18 hrs.	Standard long distance per your carrier
Standard leased dedicated line (DS-1, T-1)	1.5 Mbps	30	1	38 mins.	Charlottesville to Wise, VA. $5,872/mo.
High capacity leased lines (fiberoptic, DS-3)	45 Mbps	800	20	1.5 min.	Charlottesville to Wise, VA $18,191/mo.
SONET/ATM (STS-3)	155 Mbps	900	25	1 min.	Charlottesville to Wise, VA $12,223/mo.[2]

A contract, recently negotiated by Virginia Tech, appears to open new doors for lower telecommunications costs in the Commonwealth. *Network Virginia (*formerly *Access Virginia),* open to all Virginia institutions and state agencies, is a SONET-based Asynchronous Transfer Mode (ATM) backbone traversing the state which can carry thousands of simultaneous, two-way flows of voice, data and interactive video at costs below those currently available.

The signing of the contract begins the first phase of the project that will see the establishment of more than 45 sites across the State by the end of 1996. Within two years, it is expected that there will be in excess of 70 sites around Virginia. Four primary test sites will be operational shortly: Old Dominion University, Virginia Tech, New River Community College and Blue Ridge Community College. The Virginia Community College System intends to connect all of its 38 campuses of 23 colleges.

V. GOVERNMENT HEALTH CARE INITIATIVES

Telemedicine and the Federal Government

The Department of Defense (DOD), the Veterans' Administration (VA) and the Office of Indian Health Services have all used telemedicine to provide services to their members, both nationally and internationally. The VA has been transferring computer-based patient radiology records for some time. The Office of Indian Health Services, in conjunction with NASA, has used telemedicine to deliver care to Native Americans in rural locations. DOD has invested heavily in research and development on the use of telemedicine to provide earlier intervention for combat casualties and thus reduce morbidity and mortality rates. DOD has also used telemedicine for care of geographically dispersed beneficiaries deployed far from a clinic or hospital.

Military telemedicine systems benefit from having an extensive communications network already established, including the latest in technology. In addition, these systems have not been constrained by licensing and credentialing regulations or reimbursement regulations.

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[1] Dalton, Claudette E., MD. "Telemedicine," Virginia Medical Quarterly, 123(3), Summer 1996, p. 165.
[2] Estimated costs under the *Access Virginia* Network contract.

Health Care Financing Administration (HCFA)

HCFA is a federal agency within the Department of Health and Human Services. It was created in 1977 to administer the Medicare and Medicaid programs. While HCFA mainly acts as a purchaser of health care services for Medicare and Medicaid beneficiaries, it also:

- Assures that Medicare and Medicaid are properly administered by its contractors and state agencies.
- Establishes policies for the reimbursement of health care providers.
- Conducts research on the effectiveness of various methods of health care management, treatment, and financing.
- Assesses the quality of health care facilities and services.

HCFA has addressed the lack of definitive data supporting the use of telemedicine by funding a three-year telemedicine evaluation trial begun in October 1996 in four states (Georgia, North Carolina, Iowa and West Virginia) to gather this information. Until the results become available, HCFA prohibits reimbursement through Medicare for IATV telemedicine consults, nor is it reimbursing for telemedicine systems that are beginning to be used in homes. Because sufficient data does not exist about the outcomes and cost-benefits of telemedicine, and until HCFA makes a ruling, health care providers in a fee-for-service environment cannot receive reimbursement for telemedicine consultations with Medicare patients.

Medicaid and Telemedicine

Title XIX of the Social Security Act is a program which provides medical assistance for certain individuals and families with low incomes and resources. The program, known as Medicaid, became law in 1965 and is a jointly funded cooperative venture between the federal and state governments. Within broad national guidelines which the federal government provides, each of the states:

- Establishes its own eligibility standards.
- Determines the type, amount, duration and scope of services.
- Sets the rate of payment for services.
- Administers its own program.

Within broad federal guidelines, states determine the amount and duration of services offered under their Medicaid programs. States may place appropriate limits on a Medicaid service based on such criteria as medical necessity or utilization control. Because of the latitude available to states, Medicaid programs vary considerably from state to state, as well as within each state over time.

Medicaid operates as a vendor payment program, with payments made directly to the providers. Each state has relatively broad discretion in determining (within federally-imposed upper limits and specific restrictions) the reimbursement methodology and resulting rate for services, with certain exceptions relating to equity of provisions.

Medicaid law does not recognize telemedicine as a distinct service. Still, Medicaid reimbursement for services furnished through telemedicine applications is available as an optional cost-effective alternative to direct consultations or examinations, or as an element of many other Medicaid covered services.

When deciding whether to use telemedicine, states are encouraged by HCFA to consider factors such as the quality of equipment, type of services to be provided, and distance of consulting physician from patient. Most states that provide payment for services

furnished using telemedicine technology do so in the form of a physician consultation, or as a radiology service under the "physician services" coverage category. In some instances, non-physician practitioners may also provide telemedicine services, depending on their scope of practice under state law. Once the extent of the telemedicine utilization is determined, states may then establish coverage limits that are distinct to telemedicine applications.

Reimbursement for all Medicaid covered services, including those with telemedicine applications, must satisfy federal requirements of efficiency, economy, and quality of care. States are also required to use the least costly means of providing medical services. In this light, states are encouraged to use the flexibility inherent in the federal guidelines to create innovative payment methodologies for services that incorporate telemedicine technology.

According to HCFA, states covering medical services that utilize telemedicine for example, may reimburse for both the provider at the hub site for the consultation and the provider at the spoke site for the office visit, or states may also create an alternative payment methodology. Moreover, while the cost of electronic transmissions may not be separately billed to Medicaid, these costs could be justifiably incorporated into the fee for a coverable service.

Many state Medicaid agencies use modifiers to existing Current Procedural Terminology (CPT) codes, while several states have also developed their own local codes to distinguish medical examinations and consultations that involve telemedicine from those that do not.

At this point, Medicaid reimbursement of services utilizing telemedicine is available in at least nine states, including Virginia. In addition, the majority of states have experimented with pilot programs testing the cost-effectiveness and medical reliability of telemedicine.

Current Telemedicine Projects in Virginia

Development of telemedicine initiatives has broad appeal for many health care providers in the state. There are a number of activities that state agencies and institutions have initiated in an effort to promote the acceptance of telemedicine in Virginia (Appendix B). While no single project can serve as a model to depict current activities, the following projects are among those that are generally considered pilot or demonstration projects and demonstrate the efforts currently supported through special funding.

MCV Telemedicine: The Blackstone and Powhatan Projects. School of Medicine, Medical College of Virginia (MCV), Virginia Commonwealth University (VCU). The project utilizes telemedicine links to the Blackstone Family Practice Clinic and the Virginia Department of Corrections, Powhatan Correctional Center Medical Unit, in rural Virginia for the purpose of delivering medical education and clinical consultation.

The specific goals for the Blackstone project are: 1) to develop a telecommunications system to link medical students, residents, and health practitioners in rural Virginia to the Medical College of Virginia faculty and staff for the purpose of delivering medical education and patient consultation in the supported medical subspecialties; 2) to consider telemedicine and where it fits into rural family practice; 3) conduct cost benefit analysis of telemedicine in several medical applications in a primary care clinic; 4) determine what specialty consultation is most appropriate for the application of telemedicine in a primary care clinic; and 5) develop clinical standards and protocols for patient consultations using the telemedicine system.

The major goals of the Powhatan program are: 1) to provide clinical care to inmates with HIV/AIDS using telemedicine technology; 2) to train medical students, residents, and other health professionals at the MCV and the Department of Corrections in the use of telemedicine systems; 3) to measure the clinical effectiveness of and the cost considerations related to a telemedicine system, including matters of cost avoidance, cost shifting, and cost savings; 4) to provide continuing education to health care professionals; and, 5) to improve public safety.

University of Virginia. The University of Virginia Telemedicine Program links the Health Sciences Center to hospitals, clinics and other facilities remote from the medical center for clinical consultation and distance learning initiatives. Videoconferencing has been utilized for clinical consultations at the Augusta Medical Center, the Rockingham Memorial Hospital (in a demonstration) and the Stoney Creek Family Practice Clinic. A workstation is scheduled to be installed in a primary care clinic in Buckingham County this fall.

The University of Virginia has just negotiated a contract with the Department of Corrections to provide primary and specialty care services, including via telemedicine to the inmates of five correctional facilities.

Southwestern Virginia Telepsychiatry Project (APPAL-LINK). SW Virginia Mental Health Institute. The SW Virginia Telepsychiatry Project connects three community based public mental health programs with their related inpatient psychiatric facility, SW Virginia Mental Health Institute. Travel time from these rural areas can take up to three hours one way. Among other benefits, the telepsychiatry network will allow community providers to conduct assessments and prescreenings in consultation with SWVMHI staff; allow family members who may have difficulty traveling the distance to SWVMHI to participate in family related treatment modalities, and allow for young children and family members to "visit" with their family members at SWVMHI.

This project will allow, for the first time, continuity of care from hospitalization through outpatient treatment and will also greatly improve access to psychiatric care in the rural community mental health centers. They are also evaluating the applications of telepsychiatry in the region, studying the attitudes, expectations and experiences of providers, consumers and others involved in the telepsychiatry project. In August 1996, the Blue Ridge Community Services Board began providing services on the network for the deaf and hearing impaired clients of SW Virginia. Training for mental health professionals is also included. Also planned is an evaluation project that will test the reliability of the AIMS and the BSI rating scales. This is a collaborative effort of APPAL-LINK, the Southeastern Rural Mental Health Research Center, and the Virginia Department of Mental Health, Mental Retardation and Substance Abuse Services. Additionally, three new CSBs, will join the network to bring the total to seven (eight sites counting SWVMHI). With the addition of these three CSBs, the SW Virginia Telepsychiatry Project will expand services to include 22 counties in SW Virginia.

Telemedicine and Other State Health Care Services

Current telemedicine projects vary with respect to goals, organization, funding and technology. This diversity is apparent from descriptions of some current state telemedicine programs.

Georgia

Medical College of Georgia (MCG) Telemedicine System. The system in Georgia was initiated in November 1991. The system's overall goal is to ensure that everyone in the state has immediate access to quality health care. A system is envisioned that spreads out

from a medical center complex to a number of satellite sites, such as rural hospitals, correctional facilities, and even military bases.

The system provides two-way interactive audio/video comunications. It has an open architecture and individual components that can be replaced and upgraded.

The network has been paid for by the State of Georgia as part of the Georgia statewide communications network. A dedicated T1 communications line is used. The telemedicine system is state supported; personnel support is provided by the rural hospitals.

Medicaid and Medicare are curently reimbursing the consultant and the referring physician at Dodge County Hospital, and Medicaid pays the rural hospital a facility fee. This reimbursement was granted by the Medicare carrier (Aetna) and applies only to the original sites in Georgia and not to new ones. Blue Cross/Blue Shield reimburses only the consultant.

MCG estimates that approximately 86% of the patients who previously would have been transported to MCG now are kept at the remote sites. The daily cost of a hospital bed in a rural area is placed at approximately $800, compared with $1,300 at MCG and the costs of transportation, increased time away from work, and delay in therapy represent additional expenses.

North Carolina

Wake Forest University Medical Center. For cardiology, the output of the echo cardiography machine serves as a video source for the teleconference. The pediatric cardiologists were not completely satisfied with the quality of images across more traditional T1 video conferencing systems. With ATM, they have access to 155 Mbps of bandwidth and can transmit the echo studies in a real time mode without any loss through compression. The session is completely interactive and the cardiologist can guide the sonographer on the proper placement of the transducer. A blinded study produced no error in diagnosis. The Cemax-Icon radiology stations have been enhanced to include desktop video conferencing software. Here physician to physician consultation can be conducted, or the far end may scan the image and send it automatically to WFU Medical Center for interpretation. A study server is being put in place to forward the incoming image to the proper reading station. Everything is DICOM compliant. The pathology system is again an interactive desktop solution which allows the pathologist at WFU to scan the slide at the far end and capture the images needed to make a diagnosis. This system relies on someone at the far end to mount the slide and move it.

East Carolina School of Medicine. Seven remote sites with a mixture of fiberoptic, T1 and microwave networking and still video phones. Objectives: 1) provide communications structure to developing Health Care Delivery and Training network serving rural eastern North Carolina; 2) provide multi-specialty consultation to rural provider; 3) facilitate MD supervision of residents and PA/NPs in remote sites; 4) support rural residency programs at two remote sites, (conference, supervision, administrative meetings, consultation); 5) allow for preceptoring of all health professions students in interdisciplinary sites; 6) provide CE programming and off-campus degree classes for health professions.

Carolinas Medical Center. Analog/digital medicine is involved with developing telemedicine applications for use on both a digital network and a parallel analog network (PAN). One of the main goals of the project is to determine to what extent analog video can be utilized to offload the digital network. The project involves Carolina Medical

Center, Walter Reed Army Medical Center, and satellite hospitals affiliated with the two institutions.

North Carolina Health Care Information and Communications Alliance, Inc. The primary goals of this project are to demonstrate systems in which telemedicine improves the quality of health care available to rural and otherwise disadvantaged residents, and to improve the viability of rural hospitals which assure rural residents access to care. The State of North Carolina proposes to link emergency departments at each of the state's four medical centers affiliated with medical schools (Bowman Gray, Duke University, East Carolina University, University of North Carolina) with five remote site hospital emergency departments, including one military base hospital emergency department, to provide teleconsultations (including general trauma consults, as well as teleradiology consults) during emergencies. The project will utilize the broadband, ATM/SONET-based North Carolina Information Highway to connect the sites.

University of North Carolina at Chapel Hill. The University of North Carolina (UNC) will use the North Carolina Information Highway (NCIH) to connect the University with three rural sites: Roanoke Amaranth Community Health Group, Our Community Hospital, and Halifax Memorial Hospital. Building on a four year program of interdisciplinary geriatric assessment, the fiber optic network will support interactive video consultations among the four sites.

NTIA Rural ED Telemedicine Link. This project was established to evaluate the use of ATM technology and its utility in telemedical applications. Specifically, with the ability to provide video quality sufficient for patient diagnosis from a remote location. The system links the emergency and radiology departments of Chatham Hospital, a small rural hospital, to the UNC Medical Center in Chapel Hill, North Carolina. Establishing the telemedicine link has increased the level of service available at Chatham by making specialists available for consultation. A management group was established for evaluation and control of budgetary concerns, political and legal issues. Other groups were established to cover the areas of software development--ATM/fiber connectivity, data collection, and system assembly and testing. To date, this system has been used for a wide variety of emergency room consultations ranging from burns, trauma and cardiology. The system is also used for routine conferences between physicians, as well as for administrative meetings concerning general hospital business. The teleconferencing is also planned for future use in translation, social and possibly psychological services. The radiology system has been used for approximately 400 films over the past nine months, and provides a fully satisfactory consultation during off hours when Chatham does not have radiology coverage.

Rural Eastern Carolina Health Network. The ECU Telemedicine project began in 1991 with a link between ECU and Central Prison in Raleigh (100 miles away). The prison link has proven to be cost-effective in the delivery of specialty care. The same need for specialty care exists in medically under-served rural eastern North Carolina. The Rural Eastern Carolina Health Network (REACH-TV) is a telecommunications network deployed to provide telemedicine and distance learning to these isolated populations in NC. The network is in conjunction with the Institute for Interventional Informatics, Loma Linda University, Loma Linda, California. The goals of the network are to provide a medical communications system that will limit "drive time" for participants without the constraints of weather and geography, while providing ongoing professional training to health care professionals. The network is a hybrid utilizing fiber optics, conditioned copper and microwave links to provide two-way audio, video, and data capabilities to a geographical area larger than nine states. Over 300 medical consultations have been done over this network, involving 31 different physicians from 15 medical disciplines. The

average time of a consultation is about 30 minutes. A computerized patient record has been implemented in the host medical center and will be extended electronically to all remote sites. A custom designed telemedicine suite has been constructed consisting of four 6'x12' video booths which provide monitors, graphics transmission, and touch screen controls of all equipment. This suite of rooms currently supports four simultaneous medical consultations to four different sites.

Iowa

Iowa Communications Network is a 2950 mile state owned and operated continuous fiber optic network. There are 129 points-of-presence, connecting all 99 counties, through Part 2 completion of the network. They are currently involved in Part 3 expansion of the network which will extend an additional 350 sites across the state. All sites to date, with the exception of four hospital connections, are educational or state government sites. Hospitals have been allowed access by the Iowa State Legislature. The HCFA grant will allow evaluation of the telecommunications medium for clinical applications of telemedicine, education, and information system applications. The project involves Iowa Methodist, Trinity Regional Hospital in Fort Dodge, and Greene County Medical Center in Jefferson.

The Midwest Rural Telemedicine Consortium (MRTC) is a joint project of Mercy Hospital Medical Center (Des Moines, IA), Mercy Health Services, Iowa Region (West Des Moines, IA) and their affiliated Iowa hospitals. In 1994, a cooperative agreement was awarded to the MRTC by the Health Care Financing Administration's Office of Research and Demonstrations (HCFA/ORD), Baltimore, MD. As part of a multi-state study sponsored by HCFA/ORD, the MRTC is collecting pre-and post-session data at both referring and consulting sites in an effort to determine the effect of teleconsultations on health care costs, quality, and access. The data collected at ten MRTC sites is being transmitted to the Telemedicine Research Center (TRC), Portland, OR, for analysis. During the second half of CY 1995, a total of 141 interactive sessions were conducted, as follows: teleconsultations (50), administrative conferences (46), educational programs (20), demonstrations (17), and system tests (17). Average length of sessions was 63 minutes. In the first quarter of 1996, store-and- forward applications such as teleradiology and telepathology will be introduced on a pilot basis at various sites to augment interactive consultations. In addition, scheduling/email systems will be implemented at all sites to eliminate some of the administrative and organizational impediments to the effective delivery of teleconsultations. As of July 1996, MRTC had received more federal funding, bringing the total number of hospital receiving telemedical services to 13. Since 1994, the MRTC has received nearly $3.3 million in federal funding.

National Laboratory for the Study of Rural Telemedicine. The NLM supports several developmental components. A Telemedicine Resource Center has been established to provide the administrative and technical support necessary to complete the proposed work and facilitate interactions with our subprojects, remote hospital sites, and other telemedicine investigators. The project is developing a hospital test-bed network consisting of ten community hospitals and the University of Iowa Hospitals and Clinics. Deliverables include two health education programs: 1) the Virtual Hospital which is a multi-media database for primary practitioners and continuing education opportunities; and 2) a program which provides enhanced library services and databases electronically including document delivery. Three clinical projects include teleradiology, enhanced 3-D imaging, and a trauma triage and treatment communications system. Emphasis will be placed on data collection from the community hospitals and evaluation of telemedicine applications.

West Virginia

Robert C. Byrd Health Sciences Center of West Virginia University. MDTV is West Virginia's statewide telemedicine network which connects rural hospitals to the state's Academic Medical Centers. Rural patients and providers are provided with real-time access to clinical, education and informational resources for medical consultations, educational opportunities and other clinical services. MDTV's goals are to enhance the level of care available at the community level and reduce the sense of professional isolation commonly experienced by rural health care providers.

Clinical consultations with all specialties and sub-specialties and ancillary services are established on a site by site basis. Fully automated switching and routing virtually eliminates the reliance on technical staff for clinical consultations. Their system is averaging one consultation and 40 hours of educational programming per week. They are expanding their network to six new sites, including three community health centers and two academic medical centers.

They are also working with the WVU dentistry department to explore teledentistry using intra-oral cameras. They provide CME credits and graduate and undergraduate credit classes in nursing, pharmacy, MPH, business and economics. The system is being utilized for patient education as well as offerings to their state EMS squads and administrative conferencing. Credit courses have been offered in Nursing, Masters in Public Health, and Masters in Business and Economics.

The network includes two hub locations and twelve spoke sites. Spoke sites include two academic medical centers, two Veterans Administration Medical Centers, two Community Health Centers and six small rural hospitals.

VI. TELEMEDICINE COSTS

Determining the costs of delivering medical services is a difficult task under any circumstances. It is even more complicated when dealing with a technical application like telemedicine where so many aspects of its practice are still unknown. Comparing the cost of telemedicine with the delivery of conventional medical services is one approach. However, it is important to keep in mind that, in reality, the practice of telemedicine will assume its own characteristics and may ultimately be quite different from previous models.

The cost of telemedicine needs to be considered in relation to how it contributes to improving the health of the population by preventing disease, treating illness and ameliorating pain and suffering, and how it compares with alternative systems.

A report prepared for HCFA that included an extensive literature review of telemedicine research found no studies that provided an adequate overview of its cost-effectiveness.[1] Later studies have borne out these results.[2] Although it cannot be scientifically demonstrated that the use of telecommunications to deliver health care services will actually lower costs, it would seem to have the potential to do so for some participants.

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[1] Grigsby, Jim, Schlenker, Robert E. "Analysis of Expansion of Access to Care Through Use of Telemedicine and Mobile Health Services, Report 1: Literature Review and Analytic Framework," December 1993, p. 2-3.

[2] "Estimating the Cost-Effectiveness of Selected Information Technology Applications." Center for Health Affairs, OTA,March 1995.

While telemedicine might reduce costs in certain cases, there is also the potential that costs may increase, at least in the short term. A consultation could represent an additional cost when used for a patient who would not have been seen by a specialist at all without the availability of telemedicine. However, the advantage of early diagnosis and treatment using telemedicine may offset later, more expensive episodes, thereby reducing the overall costs of care. There is also the possibility that telemedicine might lower costs to patients, but increase costs for Medicare because more people are provided access to health care. What is not known is whether real improvements in health status would offset the increase in demand for care should either occur.

VII. REIMBURSEMENT FOR SERVICES

Third party reimbursement for general telemedicine consultations has not been universally enacted, and Medicare and Medicaid reimbursement for telemedicine, other than teleradiology and telepathology, is limited. A critical issue, therefore, for telemedicine is whether, and how, reimbursement by Medicare/Medicaid and third-party payers will occur.

Since the government has funded most of the major telemedicine programs in the United States, the primary research question has been whether telemedicine can reduce government expenditures on health care. Third party reimbursement for general telemedicine consultations has not been universally enacted.

The largest concern with providing reimbursement for general telemedicine appears to be that telemedicine will increase third party reimbursements for medical care, since telemedicine will make health care more readily accessible to underserved populations.

Organizations that are immune to third party reimbursement issues have readily adopted telemedicine. Examples of these have been indicated earlier as being military health services, state health institutions, Veterans' Administration, the Indian Health Service and capitated managed care systems.

In rural areas, up to 40% of physicians' patient base consists of Medicare/Medicaid patients.[1] Senator Pat Roberts (R-Kansas) testified at a 1994 hearing on rural health care:

> *Telemedicine is particularly important to rural health delivery systems...However, without the assurance of payment for telemedicine services, the full potential of telemedical technology will never be realized...*

While telemedicine may increase the number of reimbursements, it may reduce the average amount of reimbursement. Telemedicine ultimately appears to reduce overall costs to society associated with avoidable morbidity and mortality.

As stated earlier, HCFA, the federal agency responsible for Medicare reimbursement of services, has been under pressure to reimburse for services delivered using telemedicine and is considering what its policy should be. Traditionally, physicians have not been reimbursed for consultations using telecommunications (i.e., the telephone). Current rules for reimbursement require face-to-face contact between physician and patient. Services that do not involve direct interaction with the patient, such as teleradiology,

[1] BNA/s Health Care Policy Report 2, February 28, 1994. p. 418.

telepathology or EKG testing are also reimbursed; however, consultations in which there is interaction between patient and consultant using video conferencing are not. It is unlikely that HCFA will move ahead without a clearer understanding of all the issues. Research currently underway should address some of the questions that the agency would want answered before proposing a uniform reimbursement policy for telemedicine.

HCFA will continue to be concerned about any increase in Medicare spending that could result from reimbursement for telemedicine services. At a time when reductions in the growth of Medicare are being proposed, there will be reluctance to initiate policies that could increase costs by increasing access to services.

VIII. CONCLUSION AND RECOMMENDATIONS

Telemedicine is a technology about which we have a great deal to learn. It is generally agreed that telemedicine holds promise for improving access to better medical care for people in rural areas who are medically under-served. Likewise, it is the general consensus that improved access to education and health care holds promise for increased economic development in under-served rural areas.

A range of opinions exists regarding the extent of the effectiveness of telemedicine. Some assert that it is effective across the board while others hold pessimistic views of its role in improving health care. Literature on its clinical and educational benefits is sparse; however, pilot projects under way, in Virginia (Appendix B) and elsewhere suggest that telemedicine has significant potential for addressing problems concerning access to care for citizens of the Commonwealth. As a result, it would appear that to proceed with the support of telemedicine services in Virginia would be reasonable.

In discussions of the issues surrounding reimbursement for telemedicine services by state health programs, it is apparent that there is not presently consensus among those involved in using the technology and those responsible for managing payment for services. The reluctance to support a policy for considering reimbursement is linked to a number of things, including:

- Experimental nature of the technology.
- Lack of definitive data demonstrating its effectiveness.
- Concern that a policy supporting reimbursement will expand current medical coverage to include services traditionally not covered, such as telephone consultations and facsimile transmissions.
- Concern that improved access will increase utilization and cost.

There is widespread agreement, however, on the significance of the following assumptions:

- There is statewide interest and tradition in the efficient provision of competent medical care to citizens of the state and that telemedicine can further that interest.
- If it can be demonstrated that telemedicine is cost effective in the public sector, demand will drive its use in the private sector.

- Without the assurance of third-party payment for equivalent telemedicine services, and the resolution of the barrier it creates, the full potential of telemedicine will not be realized.

Clearly, the issue of reimbursement for telemedicine services is a major factor influencing its use in Virginia. It is also likely that third party payers are waiting for HCFA to establish a policy on reimbursement for telemedicine prior to making their decision about its future role in health care. Presumably, the studies funded by HCFA, which are under way in four states, are intended to assist in reaching a conclusion on the future of telemedicine as an acceptable and reimbursable service. Until these three year studies, begun in October 1996, are completed, it is not expected that significant changes in policy will be made at the federal level.

The evolving nature of telemedicine is witnessed by the large number of pilot projects under way. It would appear that there is great clinical promise in telemedicine consultation and a great potential benefit to patients and physicians, especially in rural or other isolated areas. However, the need exists for further research, less to determine whether telemedicine works, than to determine when and how to best utilize it in the Commonwealth.

Given the present lack of experience to support the use of telemedicine as a safe, medically effective set of procedures and the dynamic nature of the technology, it is recommended that a policy for reimbursement for telemedicine services by state health programs in the Commonwealth on a routine basis not be implemented at this time.

However, once these obstacles have been overcome, the following recommendations should be considered in support of the implementation of a policy on reimbursement for telemedicine services by state health programs in Virginia:

- The Legislature should recognize the practice of telemedicine as a legitimate means by which an individual may receive certain medical services from a health care provider without person-to-person contact with the provider.

- No state-funded health care service program should require face-to-face contact between a health care provider and a patient for substantially equivalent services, appropriately provided through telemedicine.

- To monitor the implementation of telemedicine in Virginia, the Legislature should consider funding health services research regarding quality, efficiencies and cost-effectiveness of telemedicine services, when provided by state and/or local public providers.

- State organizations that provide reimbursement for telemedicine should monitor and evaluate the services using accepted research methodologies. Components of such methodologies address items such as the research design, data collection approach, and the adequacy of the measures for analysis.

- The Joint Commission on Health Care, in conjunction with the Council on Information Management, should coordinate telemedicine research in the state to promote and support its use. Likewise, it should monitor the activities and decisions at the federal level to ensure consistency with state policy implementation.

APPENDIX A: OVERVIEW OF STATE TELEMEDICINE INITIATIVES*

State	*Year Began*	*State Actions*
Arkansas	1995	Legislation calling for development of a statewide telemedicine and distance learning network, legislative committee and governor's advisory body to oversee network, strategic plan (1996), and special fund and other appropriations for network development (maximum of just over $6 million for 1995-97).
California	1994	Legislation designating state agency responsible for telemedicine, and possible future study. No implementation time frame.
Colorado	1993	Limited state action: 1993 legislation establishing telecommunications advisory commission (sunset 7/95), flexible discounted tariffing for telemedicine (1995) (not mandated, limited). 1995 ruling by Public Utilities Commission (PUC) mandating fund for grants program for telemedicine and distance learning ($4 million, judgment against U.S. West).
Georgia	1991	Pilot established at Medical College of Georgia. 1991 Public Services Commission ruling regarding telecommunications overcharges ($73 million fund) followed by 1992 legislation to establish statewide telemedicine ($8 million) and distance learning ($42 million) network, including coordinating board. Full implementation with 59 sites in 1995, under direction of Medical College of Georgia. Involvement of Department of Administrative Services (network design, operation of state network, negotiated transmission rates); Department of Corrections for prison component; Department of Human Resources (more than $300,000/year for 1991-95). Extensive state role in system development. State Medicaid reimbursement (provider & facility fee). 1995 additional special fund support.
Iowa	1994	Legislation provided health care access to state-owned fiber optic network created for education in 1989; established advisory bodies for state planning and study; report on telemedicine completed 11/94. Program development in 1994-95 all federally funded. 1995 legislative resolution to U. S. Congress calling for Medicare reimbursement for telemedicine.
Kansas	1990	Pilot established by University of Kansas Medical Center (KUMC). Supportive state role. Legislation validating KUMC telemedicine program (1993). KUMC continued expansion (12 clinical and 35 administrative sites in 1995) and reorganized; largely self-sustaining with only limited state funding (yearly line item appropriation, $150,000 in 1995). State government telecommunications network made available for KUMC telemedicine program (reduced rates). 1994 regulatory action (Kansas Board of Healing Arts) clarifying licensure policy regarding out-of-state providers, restricting consultations. Ongoing involvement (community planning) by Department of Health & Environment and state office of rural health.
Louisiana	1992	Governor's initiative leading to state planning role and state designation of federal rural development funds for telemedicine ($500,000 in 1994). Planning, support and direction from Office of Rural Development, Louisiana State University medical centers, Health Care Authority (including $50,000 for physician reimbursement), Department of Health & Hospitals, regional AHECs, and state corrections department (funding for prison telemedicine). Multiple, separate projects being developed. In 1995, program reorganization; also change in state policy. Legislature created state coordinating council to provide statewide focus, planning and coordination, and mandated private health insurance reimbursement for physicians for telemedicine.
New Mexico	1994	Legislation funding distance learning project ($200,000); separate authorization for study (earmarking of $289,000 appropriation to University of New Mexico Health Sciences Center for telemedicine development at 1 or 2 sites).
North Carolina	1994	Governor created public/private health information alliance. State government (Office of State Planning, Department of Commerce) leadership, planning, oversight role regarding information highway and telecommunications infrastructure including for health (not specifically for telemedicine); also overall administrative support and in-kind services, use of state purchasing process. Use of state network for distance learning and telemedicine. Department of Corrections limited prison telemedicine program. 1995 federal telemedicine project with small state funding ($50,000). Involvement of state medical schools.

State	*Year Began*	*State Actions*
Oklahoma	1993	Governor's initiative in telecommunications led to state planning and development of telemedicine network funded with Community Development Block Grant ($4 million); oil overcharge monies ($300,000) used for other projects. Governor's Office and Department of Commerce direction and support. Two state university health institutions involved. Planning for 2 years; 1995 network including 38 rural hospitals and 7 regional health facilities operational in fall 1995.
Oregon	1991	Targeted state funding: 1991-1995, multiple 2-year appropriations (biennium funding of between $400,000 and $1.2 million) to Biomedical Information Communications Center (BICC) of Oregon Health Sciences University for medical information services, education and telemedicine network (use of ED-NET, state educational network) linking 43 hospitals. Legislation in 1995 called for stronger role for state: state telecommunications council and executive department position ($133,500 for policy development). Medicaid reimbursement only for mental health network.
Pennsylvania	1993	PA HealthNet pilot project announced by governor, became operational in 1994 and 1995. Multi-faceted state initiative (part of primary care initiative) (funding of $400,000 for pilot). Use of state network. Involvement of Department of Health and Office of Administration. Present administrative support beyond pilot uncertain.
South Dakota	1993	Strong state role in coordination, planning, study, oversight, Governor's initiative. Report in 1995. Direct state funding (1994) (Community Development Block grant, $500,000) and use of state network for demonstration only. Federal grant for expanded program with private hospitals (1995 operational), with state coordinating. Substantial in-kind services by Department of Health, Public Utilities Commission actively involved. Facilitating regulations (1995); legislation enacted to reduce telecommunications costs in rural areas. Also legislation regarding non-resident telemedicine consultations and supervision of mid-level practitioners by telecommunications. Medicaid agency approved reimbursement (none billed as of 1995).
Texas	1989	Texas Tech University Health Sciences Center (TTUHSC) began MedNet with federal and state ($1 million) dollars. Center for Rural Health Initiatives funding ($175,000) for expansion of TTUHSC HealthNet & Rural Health Satellite Network, and support for academic health center consortium to develop programming for distance learning (1994). South Texas AHEC, with state funding (1993 line item appropriation to university, $700,000 for 2 years) primarily for distance education programs. Major Department of Criminal Justice telemedicine program begun (1994), to be statewide ($1 million to TTUHSC & University of Texas Medical Branch-Galveston for network and capital costs in 1995). Utilization of prison component already highest in country. Department of Information Services/General Services Administration development of special state transport network (reduced rates) for health science centers and selected rural sites (1995). Public Utilities Regulatory Act (1995) will make major funding (from telecommunications companies, up to $75-150 million for telemedicine, education and other uses/year for 10 years) available for statewide telemedicine and education network (infrastructure and program development), provide for state planning and oversight, and establish discounted telecommunications rates. Provider licensure law for non-resident physicians related to telemedicine consultations.
Utah	1995	Funding for program development (demonstration) to University of Utah Health Sciences. Center from mineral lease funds ($222,800). Other supportive legislation (education network, technology initiative). Involvement of Departments of Health, and Commerce and Economic Development. Newly created AHEC also involved.
Virginia	1996	Legislative resolutions (HJR 53 and HJR 109) calling for study on use and evaluation of telemedicine by 1997.
West Virginia	1995	Medicaid reimbursement established for telemedicine (federal project).
Wyoming	1994	Legislation gave Office of Rural Health responsibility for telemedicine development. No funding or implementation.

*Source: Intergovernmental Health Policy Project, The George Washington University, State Initiatives to Promote Telemedicine 1995.

APPENDIX B: Telemedicine Activities in Virginia

Dept. of Corrections, Medical College of Virginia, Dept. of Information Technology	• Pilot project at Powhatan Correctional Center operating an infectious disease clinic for HIV infected inmates. A cardiology clinic is also conducted once a month. • Education project with Blackstone Family Practice Center where MCV is providing medical education to medical students, residents and practitioners, as well as delivering specialty services to patients.
SW VA Rural Mental Health Research Center, UVA	• Conducting research on telemedicine use for lower cost mental health services. Working with Central State Hospital. • Working with Cumberland Mountain Community Services Board in Southwest Virginia to evaluate consumer attitudes and cost effective uses of telemedicine.
Central State Hospital	• Providing consultations with MCV psychiatry department. • Participating in a demonstration project on telephyschiatry with SE Rural Mental Health Research Center.
Cumberland Mountain Community Service Board	• Providing psychiatric services and conducting commitment hearings. • Plans to connect with Blue Ridge for providing psychiatric services to hearing impaired.
21st Century Care Systems	• Diabetic evaluation/studies (vision/blindness) • Plans to deploy 9 alpha pilot sites for eye care next quarter
Department of Medical Assistance Services (Medicaid)	• 3 telemedicine pilots in coordination with MCV, UVA and SW VA Rural Mental Health Center: --consultation services, --cost, savings and quality of care, and --reliability of telemedicine technology.
University of Virginia Health Sciences Center	• Providing teleconferences and clinical consultations to physicians at the Rockingham Memorial Hospital and the Augusta Medical Center as well as to international health facilities.

APPENDIX C

HOUSE JOINT RESOLUTION NO. 109

Requesting the Secretary of Administration and the Secretary of Health and Human Resources to develop a policy for considering reimbursement for telemedicine services by state health programs.

Agreed to by the House of Delegates, February 8, 1996
Agreed to by the Senate, February 29, 1996

WHEREAS, rural communities often lack adequate access to health care services; and

WHEREAS, many rural Virginians must travel long distances to receive specialized medical services, numerous rural areas are experiencing a shortage of primary care providers, and a number of rural hospitals are under financial stress due to declining utilization; and

WHEREAS, telemedicine is the use of telecommunications technology to deliver health care services and health professions education from a central site to distant areas; and

WHEREAS, telemedicine has been used to deliver high quality, specialized health care services and education programs from urban medical centers to distant rural areas; and

WHEREAS, telemedicine could allow more rural Virginians to receive care in their home community instead of traveling to a distant site; and

WHEREAS, telemedicine could allow rural hospitals to continue serving certain patients who would otherwise travel to a distant hospital for care; and

WHEREAS, telemedicine could support efforts to recruit and retain primary care providers in underserved rural areas by supplying convenient access to specialty consultation and continuing education programs; and

WHEREAS, telemedicine demonstration projects are now in progress in at least 35 states including Virginia; and

WHEREAS, third-party reimbursement of telemedicine services is essential for expanding the availability of telemedicine services in rural areas of the Commonwealth, particularly those services involving long-distance consultation via two-way interactive television; and

WHEREAS, the Commonwealth, through the State Employee Health Benefit Program and the Virginia Medicaid program, provides third-party reimbursement for some but not all available telemedicine services; and

WHEREAS, the Virginia Medicaid program has recently initiated third-party reimbursement for selected interactive television telemedicine services, while the State Employee Health Benefits Program does not provide reimbursement for such services; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Secretary of Administration and the Secretary of Health and Human Resources be requested to develop a policy for considering reimbursement for telemedicine services by state health programs, including, but not limited to, interactive television telemedicine services, subject to appropriate standards of cost-effectiveness and quality assurance.

The Secretaries of Administration and Health and Human Resources shall provide staff support for the study. All agencies of the Commonwealth shall provide assistance to the Secretaries, upon request.

The Secretaries shall submit a progress report to the Governor and the General Assembly by September 1, 1996, and shall complete their work in time to submit their findings and recommendations to the Governor and the 1997 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.