Telemedicine Task Force

Interim Report to the Maryland Health Care Quality and Cost Council

September 24, 2010

DRAFT

EXECUTIVE SUMMARY

Charge

On June 11, 2010 the Maryland Health Quality and Cost Council approved the creation of the Maryland Telemedicine Task Force with the charge to develop a plan for a comprehensive state-wide telemedicine system of care. Like many other states, Maryland faces significant challenges in health care disparities, access to care, quality of care as well as managing limited regional health care resources. Telemedicine has been used in a variety of ways to address these problems. The goal of this report, supported by selected key documents in the Appendices, is to highlight Maryland's telemedicine needs, present an overview of various telemedicine network options, and then to make specific recommendations regarding next steps to create a Maryland Telemedicine Network.

Stroke As A Model To Assess Telemedicine Efficacy

The creation of this task force was due in part to a recent white paper from the Maryland Department of Health and Mental Hygiene entitled "Improving Stroke Care Through Telemedicine in Maryland" as well as the telemedicine recommendations of the Maryland State Advisory Council on Heart Disease and Stroke as stated in their biannual report to the Governor in both 2007 and 2009. Stroke is a major cause of morbidity and mortality in the state. Although there have been great improvement in stroke care in Maryland, efforts to improve the quality of stroke care have met significant barriers, most notably access to care and limited resources. Although the problems of health care disparities and quality improvement affect many different medical conditions in addition to stroke, the particular problem of emergency stroke care was chosen as a poignant example of the problems we face and the solution to address those problems. The Telemedicine Task Force concluded that by examining how telemedicine can help with providing better stroke care in our state, and implementing those solutions, we also learn about how telemedicine can improve care for many other medical conditions throughout Maryland.

Efforts in Other States

Many other states have developed telemedicine systems including Georgia, New York, Virginia, Massachusetts and Maine, and most recently, California. They have employed a variety of means to achieve this goal, with varying degrees of success. Issues that have to be addressed include the administrative structure, the technological infrastructure, sustainable financial support both to create that infrastructure as well as to pay for the patient care itself, legal and regulatory barriers. Legislation and regulatory changes were necessary in the states highlighted in this report. The degree of involvement of the state government itself varied from limited, to public-private partnerships to more significant administration and oversight. Regarding the technology itself, there are a wide variety of options but most telemedicine systems have the common characteristics of two way audio/video communication, and access to medical

DRAFT

information such as radiology images and laboratory tests, as well as electronic clinical documentation. Such an infrastructure can be obtained by contracting with existing telemedicine companies or a "home grown" system can be developed and implemented statewide. However, the Telemedicine Task Force felt strongly that it is important to emphasize that telemedicine is actually not about the technology per se. Rather, it is about the services being offered by experts via an interactive media that helps overcome problems of distance or access. The clinical program design should dictate the components of the technology and necessary infrastructure to support it, not vice versa. Thus, the recommendation is that rather than starting with the existing technology and see how it would address Maryland's telemedicine needs, it is more prudent and appropriate to first articulate the needs of a Maryland telemedicine system and to then define what is available to meet those needs.

Conclusions and Recommendations

In this report the Telemedicine Task Force outlined both the great promise of telemedicine to address health care quality and cost issues in the state of Maryland, as well as many of the challenges and barriers that would need to be overcome in order to achieve the goal of a state telemedicine system. After careful consideration of the current status of telemedicine in Maryland and the U.S., the Telemedicine Task Force came to the following conclusions and makes the following recommendations.

- Understanding that the benefits of creating a state telemedicine system far outweigh the limitations, the state should move forward to create such a system, the Maryland Telemedicine Network (MTN).
- The first step would be to identify a commission or other such official body to develop the necessary criteria and design requirements of the MTN. The MTN should be a private-public partnership.
- Identify funding source(s) to ensure a sustainable state telemedicine program.
- After the MTN criteria and design requirements are determined, contract with an IT provider to develop and maintain the IT infrastructure.
- Identify an administrative infrastructure to oversee the MTN and develop an ongoing quality improvement program for the MTN.
- Make legislative and regulatory changes to simplify the credentialing and privileging process and to address malpractice and liability issues, as appropriate.
- Neighboring states and the District of Columbia should be allowed to participate in the MTN.
- The MTN will need to be synergistic with the Maryland Health Information Exchange.

DRAFT

I. Background

The Promise of Telemedicine

Maryland is blessed with a wealth of medical resources and we are struggling to meet the challenges of providing quality health care to all, in an environment of limited health care resources. Fortunately, solutions to these problems are being identified and one of them is telemedicine. For many years research and pilot projects have shown the benefits of telemedicine.[1] It provides safe and effective health care, bridging the gap of not only distance but also the gap of health care disparity. Although telemedicine is well established, there are still significant barriers to overcome before its full potential can be realized.

Understanding the great benefit of telemedicine we are challenged to identify the health care needs in our state that can be addressed via telemedicine and to outline a strategy that engages stakeholders to facilitate this effort. The goal of this report, supported by selected key documents in the Appendices, is to highlight Maryland's telemedicine needs, present an overview of various telemedicine network options, and then to make specific recommendations regarding next steps to create a Maryland Telemedicine Network.

Telemedicine Task Force

On June 11, 2010 the Maryland Health Quality and Cost Council approved the creation of the Maryland Telemedicine Task Force with the charge to develop a plan for a comprehensive state-wide telemedicine system of care. The creation of this task force was due in part to a recent white paper from the Maryland Department of Health and Mental Hygiene entitled "Improving Stroke Care Through Telemedicine in Maryland" as well as the recommendations of the Maryland State Advisory Council on Heart Disease and Stroke as stated in their biannual report to the Governor in both 2007 and 2009**.** Efforts to improve the quality of stroke care in Maryland have encountered the obstacle of limited access to specialty consultation in hospital Emergency Departments (ED). This obstacle is not limited to just the traditionally medically underserved rural and urban areas, but actually adversely impacts all regions of the state regardless of socioeconomic factors. Telemedicine has been shown to be an effective means to address serious barriers to quality care for stroke patients and their families.

The Task Force members come from a wide variety of public and private entities, each of whom has special expertise in areas of health care related to telemedicine (Appendix A). The Telemedicine Task Force began its work by first determining the scope of this report. According to the American Telemedicine Association, telemedicine is broadly defined as "the use of medical information exchanged from one site to another via electronic communications to

[1] See for example, Schwamm, Lee H. et, al "A Review of the Evidence for the Use of Telemedicine Within Stroke Systems of Care: A Scientific Statement from the American Heart Association/American Stroke Association." May 7, 2009. Available: http://stroke.ahajournals.org/cgi/content/full/40/7/2616 and "Recommendations for the Implementation of Telemedicine Within Stroke Systems of Care: A Policy Statement from the American Health Association." May 7, 2009. Available: http://stroke.ahajournals.org/cgi/content/full/40/7/2635

DRAFT

improve patients' health status." It has been used in outpatient clinic settings, as an educational tool for patients and health care professionals, as well as in many different inpatient settings. Thus the topic of telemedicine covers a wide variety of areas. In keeping with the charge of the Maryland Health Quality and Cost Council, the Telemedicine Task Force decided to focus on the issue of health care quality and disparity as they relate to hospital Emergency Departments in general, and specifically on how telemedicine can address those challenges. Furthermore, although these disparities affect many different medical conditions and specialties, the particular problem of emergency stroke care was chosen as a poignant example of the problems we face and the solution to address those problems. By examining how telemedicine can help with providing better stroke care in our state, we also learn about how telemedicine can improve care for many other medical conditions.

Benefits of a Comprehensive State Telemedicine Network

In addition to stroke, similar health care disparities have been identified for a variety other conditions due to insufficient access to emergency consultation from an appropriate specialist. A Maryland Telemedicine Network would address this common problem. Another benefit of a Maryland Telemedicine Network would be the ability to better manage limited emergency medical care, including triage and transport to tertiary care facilities, by linking physicians in community hospitals with specialist expertise at the tertiary care facilities. The cost of unnecessary transports could be decreased and patient safety would be increased. Lastly, a benefit of a state telemedicine network not discussed in this report would be the ability of the Emergency Departments across the state to work cooperatively in times of state-wide emergency, be it due to natural forces or other types of disasters.

Impact of Stroke

Stroke is the third most common cause of death for adults in Maryland, and a leading cause of disability, making it one of the most important health issues in the state. Roughly speaking every 40 minutes someone in Maryland suffers a stroke and every four hours someone dies. In the past we were relatively defenseless against this disease as there were little or no acute treatments. However, that is no longer the case. In 1996 the FDA approved intravenous tPA (tissue Plasminogen Activator) as the first effective treatment for acute ischemic stroke. Yet, in the nearly fifteen years since tPA has been approved its use has not become widespread. This lack of impact is due to a variety of factors. One problem is that the drug must be given within 3 hours (4.5 hours in more select patients) of the onset of symptoms. Another issue is the need for individual hospitals to be "stroke ready," as evidenced by qualifying as a Primary Stroke Center. These challenges have been addressed effectively to some degree, however perhaps the greatest challenge that a hospital faces to become a Primary Stroke Center is availability of neurology consultation 24/7/365. Simply put, there are not enough neurologists available to provide such coverage and there are also significant economic and logistical disincentives to providing such 24/7 emergency consultation. The modern care of the acute stroke patient is further complicated by the development of several other treatment interventions, all of which are time sensitive (e.g. endovascular recanalization strategies).

DRAFT

In Maryland, over the past few years, there has been an exceptional environment of commitment and cooperation to achieve the goal of improving the quality of life and the quality of care for stroke patients and their families across the entire state. Amongst the many public and private entities involved in these efforts are The American Heart Association/American Stroke Association (AHA/ASA), the Maryland Stroke Alliance (a large citizen's stroke care advocacy group), The Maryland State Advisory Council on Heart Disease and Stroke, the Maryland Department of Health and Mental Hygiene (DHMH), the Maryland Institute for Emergency Medical Services Systems (MIEMSS), as well as a wide variety of key stake holders from health care systems and citizen's groups. A simple timeline of the accomplishments of the Maryland stroke community includes:

1996 FDA approves tPA as the first treatment for acute ischemic stroke.
1999 AHA/ASA "Operation Stroke" community education program begins which also brings together the Maryland stroke community.
2002 Maryland State Advisory Council on Heart Disease and Stroke is created (formerly known as the State Advisory Council on Cardiovascular Disease) as one of the DHMH advisory councils.
2003 MIEMSS brings together stroke specialists from the University of Maryland, Johns Hopkins University and community hospitals and creates pre-hospital provider stroke care protocols and training programs.
2003 MIEMSS implements *Maryland Medical Protocols for EMS Providers "Stroke: Neurological Emergencies"*
2004 The Joint Commission Primary Stroke Center program begins.
2004 AHA/ASA State Stroke Systems of Care program begins.
2005 Maryland State Stroke Systems Plan is drafted and approved.
2005 Maryland State Stroke Systems Plan is approved by the State Advisory Council on Heart Disease and Stroke and is included in the 2005 report to the Governor.
2006 MIEMSS Maryland State Stroke System regulations are drafted.
2006 Maryland Stroke Alliance is created.
2007 MIEMSS formal designation of Primary Stroke Centers begins.
2007 Maryland State Advisory Council on Heart Disease and Stroke report includes the need for telemedicine in order to provide acute stroke care throughout the state.
2008 MIEMSS State Stroke System Quality Improvement Committee is created.
2008 Informal advisory group meetings begin at DHMH regarding stroke and telemedicine.
2009 Maryland State Advisory Council on Heart Disease and Stroke biannual report reiterates the need for telemedicine in order to provide acute stroke care throughout the state.
2010 DHMH Stroke Telemedicine white paper is completed and supported by the Maryland State Advisory Council on Heart Disease and Stroke.
2010 The University of Maryland School of Law white paper addressing legal issues of telemedicine is completed.

DRAFT

The results of this cooperative effort have been significant. According to DHMH, as shown in Figure 1, the death rate for patients suffering a stroke has steadily declined during this period of great change and improvement in stroke care across the state. However, despite this improvement there is still a great deal to do to decrease the impact of this debilitating and deadly disease. Of note, as also shown in Figure 1, African Americans in Maryland have a greater mortality rate for stroke, a serious health care disparity in our state.

Figure 1: Age-Adjusted Death Rate for Cerebrovascular Diseases in Maryland, by Race, 1999 – 2008

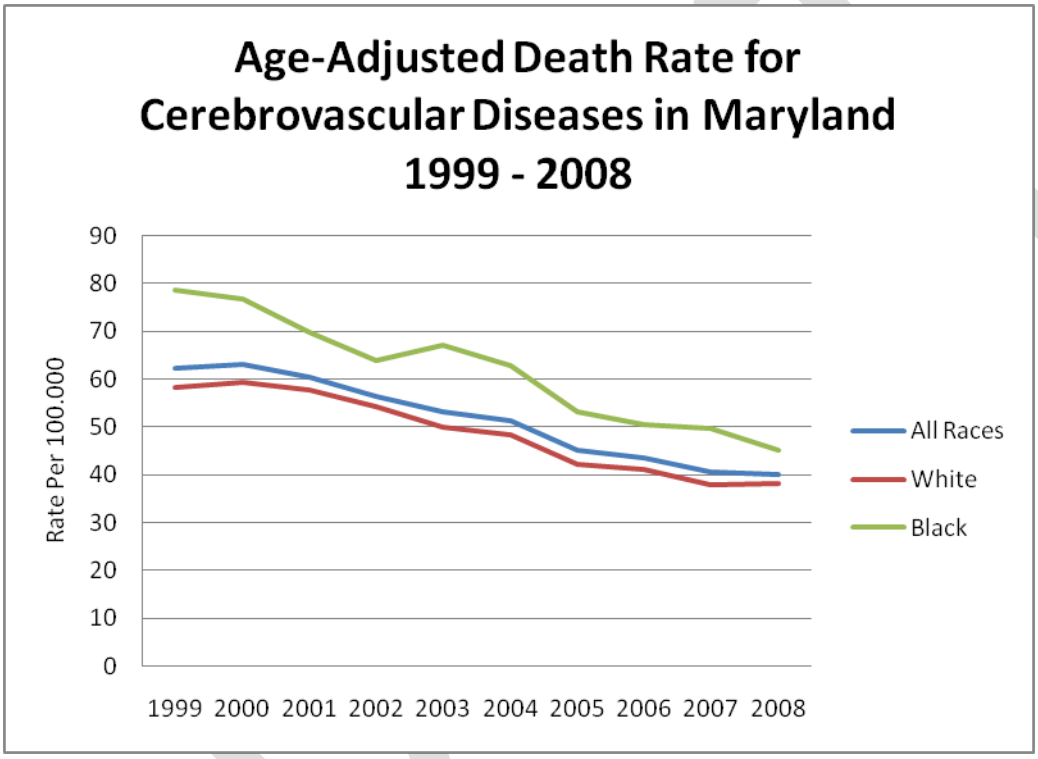
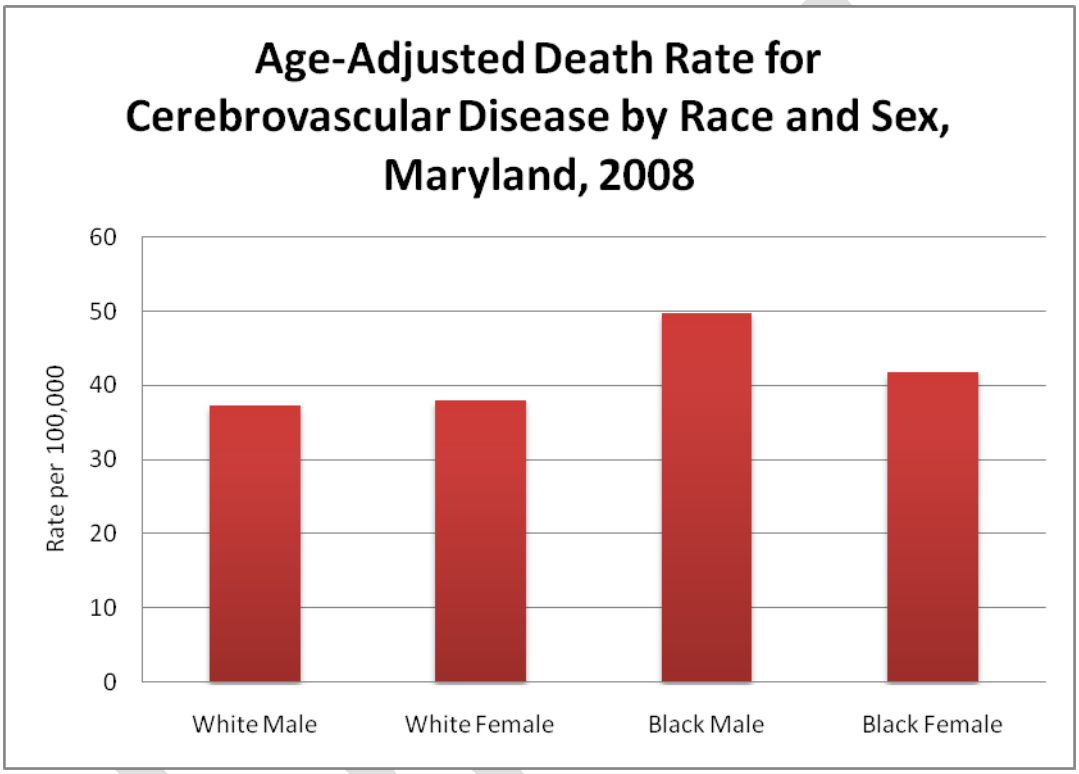


Figure 2 illustrates that this is a disease affecting both men and women, with disparities existing amongst racial groups. Despite the many efforts of the past decades African American males remain the highest risk group in Maryland. Furthermore, according to the AHA/ASA, heart disease and stroke represent a greater health risk to women in this country than all forms of cancer combined.

Figure 2: Age-Adjusted Death Rate for Cerebrovascular Diseases in Maryland, by Race and Sex, 2008

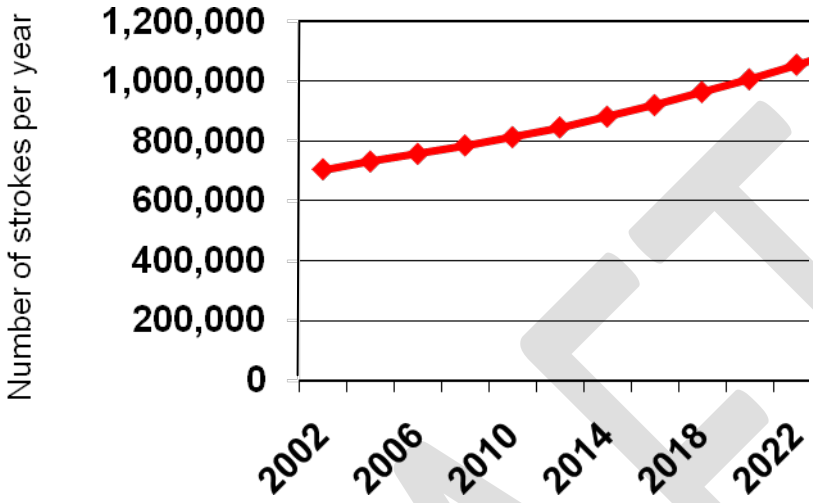


In addition to the death and disability from stroke, there is a significant financial impact as well. According to the Maryland Health Services Cost Review Commission (HSCRC) in 2008 there were over 40,000 discharges from Maryland Hospitals of patients who had suffered a stroke which resulted in $803,135,583 in total charges. Furthermore, HSCRC also reports that in 2008 outpatient stroke related expenditures were $30,005,637. Thus, the cost of care in 2008 went over the $1 billion dollar mark. One needs to also take into account the additional costs due to disability, lost wages and lost productivity related to the over 90,000 stroke survivors and their caregivers each year.

Looking to the future impact of stroke in Maryland, Figure 3 provides some very sobering information. The projected number of strokes per year in the U.S. will increase from 700,000 per year in 2002 to 1,136,000 per year in 2025, an increase of over 60 percent. Maryland stroke

epidemiological data tends to follow national trend very closely. If that trend continues this would mean that in 2025 someone in Maryland will die of a stroke every 150 minutes.

Figure 3: Projected Number of Strokes in the United States, 2002 - 2025 (from Broderick J., Stroke, 2004)



The Maryland State Stroke System

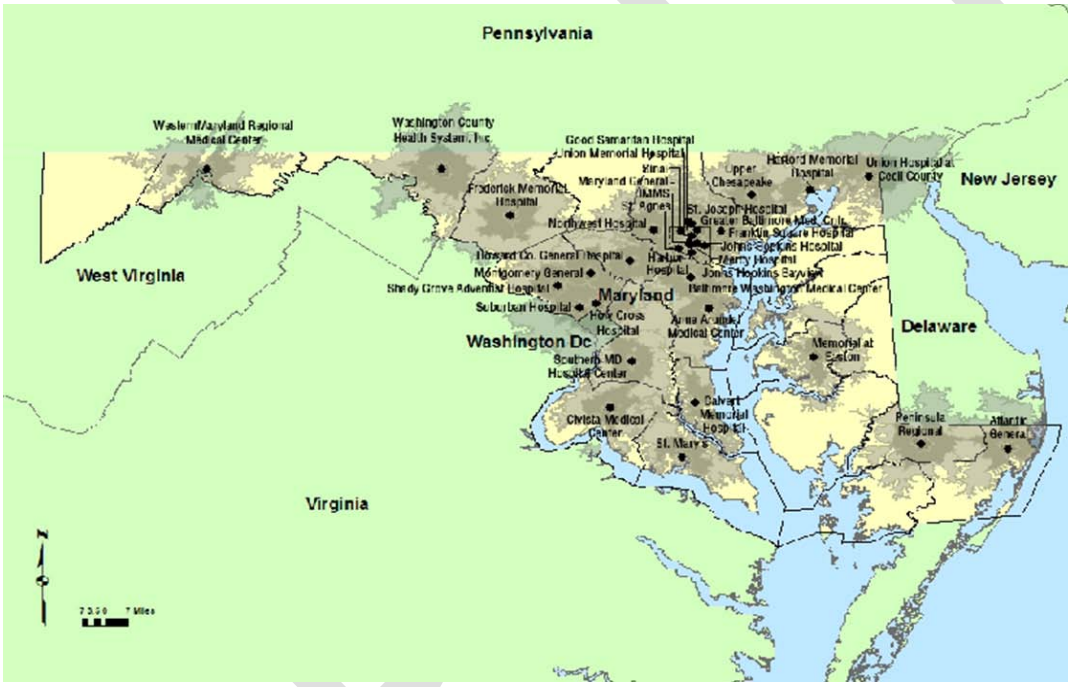
The Maryland Institute for Emergency Medical Services Systems (MIEMSS) is an independent state agency responsible for the statewide system that coordinates emergency care including pre-hospital care, Emergency Departments, trauma and specialty centers. The Maryland Stroke System model establishes a regional systems approach for the acute stroke patient including EMS protocols/triage; inter-facility transfer guidelines; stroke data management/quality improvement, and designation of Primary Stroke Centers. Regionalization of stroke care ensures that patients are transported to facilities capable of providing stroke care. In July 2003, a statewide EMS Neurological Emergencies Protocol was implemented. The goal is to deliver patients within 2 hours of symptom onset to a facility capable of providing definitive acute stroke care. In 2007, Regulations were promulgated designating Primary Stroke Centers.[2] Primary Stroke Centers evaluate, stabilize and provide emergency care to patients with acute stroke and then, depending on the patient's needs and the center's capabilities, either admit the patient to a stroke unit or transfer the patient to a receiving hospital with stroke unit resources. Within MIEMSS, the Office of Hospital Programs implements the designation and verification processes for trauma and specialty referral centers including Primary Stroke Centers. Hospitals desiring designation are verified either by a MIEMSS site visit or Joint Commission Primary Stroke Center Certification. A memorandum of understanding between MIEMSS and the Joint Commission permits attendance at Joint Commission site reviews and notification of "high

[2] See Code of Maryland Regulations (COMAR) 30.08.11

priority" complaints. Eligibility includes licensure by the State's Department of Health, a 24/7/365 Emergency Department and MIEMSS designation as an online EMS consult station.

As of January 1, 2010, 34 (79%) of the State's 43 eligible hospitals have achieved Primary Stroke Center designation. Figure 4 indicates the location of these certified stroke centers, as well as the 15 and 30 minute drive times to those centers, illustrating that the majority of the state's population can be brought to a Primary Stroke Center via EMS in a quick and timely manner. Of the 34 designated Primary Stroke Centers, 17 are Joint Commission/MIEMSS designated and 17 are MIEMSS designated. A recent call for applications for Primary Stroke Center designation was placed in the Maryland Register and two (2) additional hospitals have submitted letters of intent. If certification is achieved by those centers important gaps in this map will be filled.

Figure 4: 15 and 30 Minute Driving Distance to Maryland Primary Stroke Centers, 2010



The Maryland Stroke Center Quality Improvement Committee (Stroke QIC) is an advisory body to MIEMSS for quality issues affecting the care of patients with acute stroke. The Stroke QIC addresses issues primarily related to the system-wide delivery of stroke care in the clinical setting including recommending performance improvement activities and indicators. Membership is comprised of one voting representative from each designated Primary Stroke Center. A workgroup comprised of members from the Stroke QIC is currently working on the development of the stroke inter-facility transfer guidelines and the regulations for designation as a Comprehensive Stroke Center. The development of the inter-facility transfer guidelines is

accelerated by the availability of more advanced treatments at tertiary medical centers, the need to rapidly transfer patients to the appropriate closest hospital when time is of the essence and the variability in access to medical and surgical specialty expertise in different locales. The development of the guidelines will maximize quality of care, ensure patient safety and promote effective use of health care resources. The inter-facility transfer guidelines will aid organizations in making timely and appropriate decision-making on optimal acute stroke care treatments as it relates to the transfer of the acute stroke patient. Having the availability of access to telemedicine in combination with the utilization of the inter-facility transfer guidelines will provide the best possible acute stroke patient triage and ultimately improved patient care as well as patient outcomes. The goal is to have the right patient at the right place at the right time. Hospitals seeking designation as a Comprehensive Stroke Center will treat those patients experiencing complex strokes, severe deficits, or multi organ disease. Comprehensive Stroke Centers provide high intensity medical and surgical care, specialized tests, or interventional therapies which are not readily available at the Primary Stroke Centers. Additionally, the Comprehensive Stroke Center will act as a resource providing guidance and education to other facilities in the region or state.

Each Primary Stroke Center participates in the AHA/ASA "Get with the Guidelines-Stroke" data registry. The registry tracks the data elements which are utilized for benchmarking as well as quality improvement goals. MIEMSS has access to this data for health oversight activity and monitors the data monthly. Data obtained from the registry indicates overall compliance rate of 85.3 percent with all ten quality indicators in 2008 as compared with an overall compliance rate of 89.1 percent in 2009. This comparison indicates an overall increase of 3.85 percent. The increase in compliance rate suggests ongoing evaluation and quality improvement in the care provided to stroke patients.

Regarding the impact of the Maryland State Stroke System, data from the *Get with the Guideline-Stroke* registry comparing 2008-2009 findings indicate a 2.7 percent increase in pre notification of the emergency department from EMS personnel and a 7.6 percent increase in eligible patients arriving within 2 hours of symptom onset and treatment initiated within 3 hours of symptom onset. Furthermore, other MIEMSS data revealed that in 2009 a total of 419 patients received emergency stroke treatment with IV tPA, a vast improvement from the mere handful of patients who received such treatment in 1999. These data show strong support of the conclusion that the Maryland State Stroke System has had a significant impact on patient care in the state. However, they also illustrate that there still remains a great deal to do.

Vulnerabilities of the State Stroke System

Despite the many successes of the Maryland state stroke system, significant vulnerabilities exist. First, there are still six counties in the state that do not contain a Primary Stroke Center. Second, the emergency neurology consultation resource is stretched thin amongst the primary stroke centers. If only one neurologist decides to retire or otherwise no longer take emergency call that that hospital would lose its Primary Stroke Center designation. Third, tertiary referral centers (e.g. University of Maryland, Johns Hopkins Hospital, Washington Hospital Center) have all noted a fifty percent increase in telephone stroke consultation, including requests for transfer, due to the increasing number of Primary Stroke Centers and their increasing knowledge of

DRAFT

sophisticated stroke care. Fortunately, a Maryland Telemedicine Network would address all these areas of vulnerability.

Unmet Hospital Needs

In 2009 MIEMSS and the Stroke QIC completed a survey of current stroke resources in Maryland. As mentioned above, the good news was the number of hospitals that had achieved or were planning to achieve Primary Stroke Center certification. However, it revealed a de facto regional stroke system that has maximized its limited resources and is very much in need of a coordinated approach to care. For example, in 2009 over 400 stroke patients were transferred from community hospitals to tertiary hospitals for specialized care. That means more than one patient transferred a day and often via air transport. However, there are only a total of 58 Neurologic Intensive Care Unit beds in the state, which are often full. The MIEMSS survey noted that on average all the Neurologic Critical Care Units in the state are at capacity 46 times a month. It is clear that advanced stroke care is a limited resource which must be managed more effectively. Most of these transfers come from community hospital Emergency Departments, and unfortunately not all of them are truly necessary in retrospect. Furthermore, air or ground transport of a critically ill patient should not be routine but rather should be done only when necessary. A better system of emergency patient evaluation and triage is required.

Another major short coming of our state system is limited access to specialty consultation in the Emergency Department. For stroke patients this refers to Neurology, Neurosurgery and Interventional Neuroradiology, but there are also a wide variety of other specialties that have insufficient capability to provide emergency evaluation of patients with other medical conditions. For the purposes of this report the Maryland Hospital Association surveyed its member hospitals regarding this issue. From the responses eighteen different specialties where identified as those for which there is a need for telemedicine support. Stroke, Neurology (other than stroke), Dermatology, Wound Care, Burns and Cardiology were amongst the highest cited. Other specialties such as Orthopedics, Plastic Surgery and Otolaryngology were also noted as being in short supply for Emergency Department patient evaluation.

The issues of insufficient ED specialty consultation capability and the need for better regional coordination of care due to limited resources are not unique to Maryland. Rather, this is a common problem across the U.S. Fortunately, telemedicine has been shown to be a safe and effective solution to these problems. Extensive information and references are included in the DHMH stroke telemedicine white paper (Appendix B) as well as the AHA/ASA stroke telemedicine recommendations previously referenced.

II. Telemedicine Options

General Considerations

To shed further light on the advantages and disadvantages of the various telemedicine options the Telemedicine Task Force asked Information Technology (IT) experts from the University of

DRAFT

Maryland Medical System and the Johns Hopkins Health System to contribute to this report. These IT experts noted that of greatest importance was the perspective that telemedicine is actually not about the technology. It is about the services being offered by experts via an interactive media that helps overcome distance or access. The clinical program design will dictate the design of the technology and necessary infrastructure to support it. Thus, their recommendation was rather than start with the existing technology and see how it would address Maryland's telemedicine needs, it is more prudent and appropriate to first articulate the needs of the Maryland Telemedicine Network then look at what is available to fit those needs.

For the purposes of this report, following a general overview of design requirements, is a review of some of the existing private companies that provide stroke telemedicine services (an environmental scan) followed by a description of a few "home grown" efforts in other states wherein a telemedicine infrastructure (including both hardware and software) was developed and maintained internally. In the last section entitled "emerging technologies," which is the Telemedicine Task Force's preferred option, there is a description of the approach of first developing criteria and design requirements of the Maryland Telemedicine Network. This would then be followed by contracting with an IT provider to design and maintain a custom telemedicine infrastructure to address those articulated needs and design requirements.

Of note, any decision to contract must first be effectuated in accordance with State procurement law. This limits pre-solicitation contacts with vendors. State agencies would need to give all potential vendors equal opportunity to bid and potential vendors cannot be involved in development of bid specs. It would be of utmost importance to obtain advice from agency procurement specialists before solicitation efforts begin.

Telemedicine IT System Requirements and Technical Options

Regarding such design requirements and current options, it should be noted that some networks have been effective with just telephone communication and access to images (brain scans) by the consulting physician. Others require more interactive technologies such as two way audio and video or peripheral devices allowing a greater patient to consultant engagement. It is recommended that the state telemedicine system includes at a minimum both two-way audio and video.

Other considerations and costs include initial and ongoing training, IT support, maintenance costs and connectivity. Regarding training, the technology being discussed is not complicated to use, but it will take 1-2 Full Time Equivalent (FTE) staff to spend time traveling the state to each site helping users become familiar with the technology and its capabilities. IT support and a telemedicine "champion" at each site will be required. The level of effort will be determined by the solution that is ultimately recommended. A percent (to be defined) of an FTE should be a committed resource to the Maryland Telemedicine Network. In addition, regardless of system design, ongoing annual maintenance costs should be considered. Connectivity also must be considered, as not all hospitals have the same bandwidth to the facility or wireless cloud inside the hospital. It is suggested that the state consider providing support to build the 'final mile' and wireless cloud necessary to allow for strong connectivity at these smaller institutions.

DRAFT

A typical telemedicine system is organized in a "hub and spoke" model. The tertiary referral centers, known as "hubs", support a number of community hospitals, known as "spokes", with telemedicine expertise. The requirements of the expert site (the "Hub") will be that it is PC-based and mobile (i.e. laptop or desktop based) allowing connectivity from the home, the office or anywhere in between. Several options for the telemedicine network remote sites (the "Spokes") and estimated costs are discussed below.

Option 1: High Definition Video Conference Codec Based Network
Option 1 is a mobile cart solution allowing for real time, two-way audio and video. This cart is powered by a battery able to operate for 2-4 hours on a single charge. The communications will be provided by a High-Definition Video Conferencing Codec (commercially available) and include two-Pan Tilt Zoom (PTZ) cameras (general view and overhead). In addition, the unit will be expandable to include peripheral devices (i.e. exam camera and tele-otoscope) to allow for more direct clinical diagnostics. This cart will require network connectivity on the local hospital network and local IT-support at the hospital sites. Estimated costs are $25,000 hardware costs per hospital site (Spoke) and 0.25 FTE of IT support.

Pros	**Cons**
Multiple Cameras	Local IT Support
High Definition Capable	Not-Wireless
Flexible (can be used outside of stroke)	Requires someone to push the cart
Standards Based	Each site has an IP address that may change
Robust technology	

Option 2: PC-Based Video Conference Codec Based Network
The second option is a mobile cart solution that also allows for real time, two-way audio and video. This cart is battery powered and able to operate for 2-4 hours on a single charge. The communications will be provided by a PC-based Video Conferencing Codec (commercially available) and include two standard cameras (general view and overhead). Each cart will have a PC on it, able to not only allow for video communication, but bring up additional web-based information. This cart will require network connectivity of the PC to the local hospital network. When available, this PC could be wireless allowing easy connectivity throughout the hospital's Emergency Department. In addition, the unit will be expandable to into peripheral devices (i.e. exam camera and tele-otoscope) to allow for more direct clinical diagnostics. Local IT-support at the hospital sites is required. Estimated costs are $17,500 hardware costs per hospital site (Spoke) and 0.25 FTE of IT support.

DRAFT

Pros	**Cons**
Multiple Cameras	Local IT Support
Lower Cost	Standard Definition Cameras
Flexible (can be used outside of stroke)	Requires someone to push the cart
Standards Based	Each site has an IP address that may change
Wireless (when available)	Quality of image may be limited to PC processing speed

Option 3: Server Based Network with Codec or PC-based Endpoints

Management of technology for any network is a challenge. Managing endpoints for a network for 40 endpoints spread throughout the state will be difficult. By establishing a server based video communications network, all endpoints (units outlined in Options 1 and 2) will be connected to this central server. As all the endpoints of the Maryland Telemedicine Network are registered to this centralized infrastructure, the system administrator is then able to monitor and more easily authenticate endpoints, manage each individual endpoint for software maintenance and availability, and create alerts notifying the network administrator of changes at the sites. The infrastructure would allow for greater management of the endpoints and take some of the burden off of the IT departments at each of the hospital sites to ensure availability. Estimated costs are $250,000 in addition to each endpoint cost from Option 1 or 2. In addition 0.5 FTE should be established as part of a central group to monitor and maintain the entire video conference network. The "home" for the server and IT support would need to be defined, specifically an agency or organization with administrative oversight. Future applications may require a collaborative "second home."

Pros	Cons
Addresses the IP Change issue in Option 1 and Option 2	Investment
Helps manage endpoints across geographic region	Central IT Resources and Location
Makes connectivity for users easy	
Helps alleviate firewall issues	

DRAFT

Leading Companies in the Market – Environmental Scan

At the present time there are a number of existing companies that provide stroke telemedicine support services. The DMHM white paper on stroke telemedicine reviews these options in detail (see Appendix B of this report). For the purposes of this report three leading companies were reviewed and compared. These companies support "hub and spoke" model stroke systems. For the purposes of comparison the Telemedicine Task Force chose to compare the characteristics and costs of various options for a theoretical state stroke system consisting of two hubs, each supporting ten spokes (a total of 22 hospitals).

1. **Company A:** Company A originally started at an academic medical center as a stroke telemedicine research project, but has since evolved into a private company. It is currently the stroke telemedicine system used by two state stroke telemedicine systems as well as a number of individual medical centers. Company A provides the telemedicine infrastructure, but not the neurology specialist consultation. At the present time the neurology consultation is provided by the hub hospital. The costs are shared by both the hub and spoke hospitals. Initial start up costs for each spoke hospital is $22,000 which includes hardware, installation and training. The on-going annual maintenance fee is $2,000 per month. The initial start-up cost for the hub hospital is $15,000 with an annual maintenance fee of $1,500 per month. An additional cost would be the cost of the neurology consultation itself. A recent unofficial poll by the American Academy of Neurology noted that the payment per 24 hours of on-call telemedicine neurology consultation varies widely, from as little as $250 per 24 hours to over $1,000 per 24 hours. For the purposes of comparison the Telemedicine Task Force chose the rate of $500 per 24 hours, with one neurologist on call per hub. Thus, the total cost for 2 hubs, each supporting ten spokes and including the neurology consultation, would be $1,168,500 in the first year and $698,000 for subsequent years. The advantage of this system is that it is a tested system which supports a hub and spoke model. Disadvantages include cost and the lack of the specialty consultation itself. Furthermore, the system is more specific to stroke care and less amenable to support other medical specialties via telemedicine.

2. **Company B:** Company B provides not only the infrastructure but also the neurology consultation. It is currently serving hospitals in 12 states with plans to expand to 19 states, including Maryland. In addition to neurology consultation, they will soon be expanding to Psychiatry and Orthopedics. The initial start-up cost is $40,000 per year per hospital and the cost for consultation is approximately $8,000 per month. For the purposes of comparison for this report, the total cost for a state system would be $2,742,000 for the first year and $1,932,000 for subsequent years. The advantage of this system is that it provides not only the infrastructure but also the neurological consultation. Disadvantages include not only cost and being limited to just a few specialties, but it does not address the important need for management of regional stroke care resources. Specifically, the immediate treatment decisions in the community hospital are met, but there is no subsequent management such as coordinating transfer to

DRAFT

a tertiary care facility as the neurologist on call is likely to be in another state and is not responsible for subsequent management of the patient's care.

3. **Company C:** Company C provides an telemedicine system which they prefer to describe as "remote presence." The "robot" that they have developed is a unit that can be controlled via the internet by the consulting neurologist wherever that neurologist may be, as long as the neurologist has internet access via a special lap top computer. The consultant is able to drive the robot throughout the Emergency Department without the assistance of the ED staff. Further, it allows face-to-face communication, via monitors, between the consultant, the patient and the ED staff. It is currently used by private hospital systems in several states. Installation and training are provided for free at the present time. Spoke hospitals pay an average fee of $5,000 per month. Hub hospitals pay an initial start-up fee of $2,800 per workstation, but no maintenance fee thereafter. Neurology consultation is not provided. When the cost of the Neurology consultation is added, the total cost for a state system would be $1,399,300 for the first year, and $1,382,500 per year for subsequent years. The advantage of this option is the independence of the remote presence capability and the ability to support multiple medical specialties via telemedicine. The disadvantages include the cost, sub-optimal telemedicine radiology capability and that no consultation services are provided.

"Home Grown" Systems

In addition to the above mentioned private companies, several highly regarded University health care systems have developed telemedicine systems. Such "Home Grown" systems were developed independently by these health systems using a combination of internal IT capability, purchased hardware and software as well as contracting with private companies as needed. For the purposes of an environment scan two such home grown systems were reviewed.

1. **Massachusetts General Hospital (MGH):** The most well-established is the system developed by Massachusetts General Hospital. In conjunction with its partner hub hospital, Brigham and Women's Hospital, it maintains a two hub/twenty spoke system that de-facto is the Massachusetts state stroke system. The technical infrastructure is contracted out to a private video conferencing company, with additional infrastructure developed internally by the MGH IT Department. Initial start-up costs for the hub hospitals was estimated at $200,000, with similar subsequent annual costs due to the need to pay salaries for support staff, software licenses etc. Each spoke hospital must pay $15,000 for the initial investment, and $13,000 per year for consultation. Thus, if reproduced in Maryland, the initial cost for a state system would be $850,000 with an annual cost in subsequent years of $540,000 a year. The advantage of such a system is that not only that the consultation itself is provided, but also the subsequent management of each case necessary to achieve regional system-wide integration. The disadvantage is the need to not only purchase and maintain the system, but also the problem of rapid obsolescence as the telemedicine technology rapidly improves.

2. **The University of Pittsburgh Medical Center (UPMC):** UPMC has developed a system similar to the MGH system. It serves hospitals in western Pennsylvania, but it is

also currently being used by Washington County Medical Center in Hagerstown to fill gaps in the neurology ED call schedule that they have due to insufficient neurologists in the area.

Emerging Telemedicine Technologies

It should be kept in mind that telemedicine is a rapidly developing field with rapidly changing technology. An ideal system that works effectively one year could be obsolete within just a few years, which raises concerns given the significant expense of setting up such a system. The telemedicine systems described above may appear state of the art, but they will likely be soon replaced with other systems. Very simple web based approaches using secure teleconference capability on websites such as Google have been effectively used for "quick and dirty" informal telemedicine consultation. Furthermore, new devices such as the iPhone and the iPad may soon provide sufficient functionality to meet the basic needs of a telemedicine system.

Thus, rather than purchasing and maintaining a telemedicine infrastructure on its own, a state wishing to set up a telemedicine system might be better served to contract with an IT provider to develop and maintain the infrastructure. Such companies are constantly innovating and keeping up with the latest technological advances, and thus the state system would be kept up to date without the state bearing the burden of maintaining and/or replacing obsolete equipment.

The first step to creating such a telemedicine system, prior to engaging with potential IT providers, would be to develop the design requirements. In addition, the organizational structure of the telemedicine system would need to be determined as well. The advantage of this approach is that it builds upon the established relationships and practices that already exist between hospitals in Maryland, adjacent states and the District of Columbia. Furthermore, it allows for a telemedicine needs assessment that can go beyond the emergency department to other hospital areas, such as intensive care units, which could also benefit from telemedicine. For all intents and purposes a regional system of stroke care already exists de facto. It is therefore logical to start with the lessons learned over the years from that system, then determine what capabilities are needed to be provided by the telemedicine system.

The advantage of this option is not only is it customized to the unique needs of Maryland, but also that it is flexible to adjust to changing needs. It also shifts the burden of development, maintenance of upgrading the infrastructure to an IT contractor which could reduce the overall costs of the system to the state. Most importantly, it allows for more involvement of local stakeholders at all levels of care to provide the advantage of better management of regional health care resources.

III. Finance and Legislation

Other States

Several other states have already investigated telemedicine as a potential solution for health care disparities, to assist in efforts to improve quality and to encourage cost-effective care. This is

DRAFT

especially important in regard to the critical question of how to finance a state telemedicine system. The states of Virginia, Georgia and Maine were reviewed in the 2010 Health Care Quality Commission report "Telestroke Business Model." In these states legislation was passed or funding was acquired by a variety of means for further development of telestroke networks and to remove some of the barriers that exist. Other states such as Arkansas, New York, and California have also made significant strides in addressing the financial and regulatory barriers to create a state telemedicine system. Summary of these efforts is as follows:

1. **Virginia:** Two important strategies that have met with success in Virginia have been the creation of a 501(c) non-profit corporation, the Virginia Telehealth Network (VTN), as well as the passing of legislation that addresses reimbursement issues. The Virginia Telehealth Network was created in 2008 by raising over $ 5 million in federally-funded grants and state-based matching funds. It is tasked to help improve the state's health IT infrastructure as well as to coordinate efforts to improve care in rural communities. One of its first initiatives was the Virginia Acute Stroke Telehealth (VAST) network, which focuses on using telemedicine to improve the treatment of acute stroke. A pilot program is underway in the central Shenandoah region, with the objective to bring together stakeholders across the state to move towards the ultimate goal of a fully-integrated stroke system.

   More recently, Virginia has also addressed the financial challenges of creating a state-wide telemedicine system via legislative means. Adequacy of ongoing reimbursement for professional and other services provided to acute stroke patients is essential. Lack of adequate physician and hospital reimbursement has played a critical role in delaying the development of sufficient acute stroke call coverage capability and may have had a more profound effect on smaller, nonacademic hospitals. Reimbursement for telemedicine services and acute stroke treatment has been improving in the United States. The National Broadband Plan explicitly sought to promote telemedicine as a means of lowering health care costs and promoting high-speed Internet build-out in rural areas. Telemedicine has been shown to be very effective in bringing low-cost medical services to underserved rural and urban areas. Virginia recently became the fourteenth state to enact health care legislation requiring insurance coverage for telemedicine. In April of 2010 Virginia Governor Bob McDonnell signed SB 675, a health insurance bill that requires insurance companies to cover a patient's use of telemedicine and related technologies.

   Virginia SB 675 requires insurers to offer coverage for telemedicine services. The bill provides that when a policy contract, plan, certificate or evidence of coverage includes telemedicine services, the definition of "adverse decision" includes a determination that the use of telemedicine services rendered or proposed to be rendered is or is not covered under the policy. The definition of "utilization review" will include reviews related to whether coverage of the delivery by a health care provider or health care services through the use of interactive audio, video or other telecommunications technology is required pursuant to § 38.2-3418.16. The bill requires insurers to provide coverage for the treatment of telemedicine services. "Telemedicine services" means the use of interactive audio, video, or other telecommunications technology by a health care provider to deliver

DRAFT

health care services within the scope of the provider's practice at a site other than the site where the patient is located, including the use of electronic media for consultation relating to the health care diagnosis or treatment of the patient. Of note, "telemedicine services" do not include an audio-only telephone conversation, electronic mail message, or facsimile transmission between a health care provider and a patient.

An insurer, corporation, or HMO cannot exclude a service for coverage solely because the service is provided through telemedicine and is not provided through face-to-face consultation or contact between a health care provider and a patient for services appropriately provided through telehealth services. A determination by an insurer, corporation, or HMO that the delivery by a health care provider of health care services through the use of interactive audio, video or other telecommunications technology is not covered will be subject to utilization review and independent external review of adverse utilization review decisions. No insurer, corporation, or HMO can impose any annual or lifetime dollar maximum on coverage for telemedicine services other than an annual or lifetime dollar maximum that applies in the aggregate to all items and services covered under the policy, or impose upon any person receiving benefits pursuant to this section any co-payment, coinsurance, or deductible amounts, or any policy year, calendar year, lifetime, or other durational benefit limitation or maximum for benefits or services that is not equally imposed upon all terms and services covered under the policy, contract, or plan.[3]

2. **Maine:** In 2009, the Maine Legislature overwhelmingly passed a bill that mandates all health plans to cover telemedicine services. The law requires interactive audio or video and does not include the audio-only telephone, e-mail, or a fax machine. The key provision is the following:

> "A carrier offering a health plan in this State may not deny coverage on the basis that the coverage is provided through telemedicine if the health care service would be covered were it provided through in-person consultation between the covered person and a health care provider. Coverage for health care services provided through telemedicine must be determined in a manner consistent with coverage for health care services provided through in-person consultation. A carrier may offer a health plan containing a provision for a deductible, copayment or coinsurance requirement for a health care service provided through telemedicine as long as the deductible, copayment or coinsurance does not exceed the deductible, copayment or coinsurance applicable to an in-person consultation."

Other changes in Maine included Medicaid law and regulations. MaineCare (Maine Medicaid) requires that there be a "compelling benefit" for the member to cover and reimburse for telehealth services, as listed under Ch.1, section 1.06-2 of the MaineCare

[3] Addition information regarding SB 675 can be found at: http://leg1.state.va.us/cgibin/legp504.exe?ses=101&typ=bil&val=sb675

DRAFT

Benefits Manual. The only reimbursable services must use two-way audio and video equipment. MaineCare also requires that educational information be provided to the patient at the time the telehealth services are rendered. Covered services include: physician consultations and other services as provided in the Benefits Manual.

The benefit must be related to physical, social or geographic issues that make delivering the service in person difficult. It must not be for the convenience of the provider. The member's record must contain documentation that the member has met one or more of the criteria listed below:

- Physical: A member's medical condition makes a face-to-face encounter that entails significant travel inadvisable or impossible.
- Social: The family or other support system does not support a member traveling a distance for a face-to-face encounter, or does not allow the member to take the time that travel will require.
- Geographic: There is a lack of medical/psychiatric/mental health expertise locally, limited transportation resources, or a long wait for such local care.

Of note, the Telemedicine Reimbursement Report (2003) prepared by the Center for Telemedicine Law noted that:

> "Effective in January, 2003, Maine adopted a policy to cover services provided via telemedicine by enrolled providers. Transmission costs, consultations between professionals, or attendants instructing a patient in the use of the equipment are not reimbursed. Providers submit a specific description of the procedures and codes that will be used, a statement explaining the rationale for needing telemedicine capabilities, a policy noting criteria to determine when telemedicine services are appropriate, and a quality assurance plan. Services delivered via telemedicine are not billable if the provider does not have a letter of approval. Telemedicine services may not be provided only for the convenience of the provider. The same procedure codes and rates apply as if services where rendered in a face-to-face encounter. Claims must be submitted for review on an individual basis."[4]

3. **Georgia:** Georgia Medicaid covers and reimburses for certain telemedicine services. Provider manuals can be found on the Georgia Health Partnership website. Covered services include telemedicine consultations under the Physician Services. Medicaid recognizes physician consultations when furnished using interactive video teleconferencing. Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner. Reimbursement is made at both ends (hub and spoke sites) for telemedicine services. The state uses specific local codes to identify the consultation furnished at the hub site. No

[4] Additional information on Maine's legislation can be obtained at the following website: http://www.mainelegislature.org/LawMakerWeb/summary.asp?ID=280031972

special codes or modifier is used at the spoke site. Other reimbursement information can be found on the Medical College of Georgia's Center for Telehealth website (Georgia Telehealth).

Also of note the Telemedicine Reimbursement Report (2003) prepared by the Center for Telemedicine Law noted that:

> "The Medicaid agency recognizes physician consultations when furnished using interactive video teleconferencing. Payment is on a fee-for-service basis, the same as the reimbursement for covered services furnished in the conventional, face-to-face manner. Reimbursement is made at both ends (hub and spoke sites) for telemedicine services. The agency uses specific local codes to identify the consultation furnished at the hub site. No special codes or modifier is used at the spoke site."

4. **Arkansas:** The Arkansas SAVES (Stroke Assistance Through Virtual Emergency Support) program provides rural hospitals with a high-tech, video communications system so that when stroke patients come through the ER, they can quickly and expediently receive appropriate care and a real-time consult from one of the state's three board-certified vascular neurologists. SAVES Program Medicaid Funding program was started by a one-year, $6.1 million Arkansas Department of Human Services Medicaid contract. The three neurologists are SAVES medical director Salah Keyrouz, MD, and James Schmidley, MD, both of UAMS, and Margaret Tremwel, MD, a neurologist at Sparks Regional Health System in Fort Smith.

   The first partners in the program were the UAMS Center for Distance Health, the state Health Department, Sparks Regional Health System in Fort Smith, Booneville Community Hospital, Johnson Regional Medical Center and Mena Regional Health System. In February, McGehee-Desha County Hospital and DeWitt Hospital were added to the program. Three more hospitals, Helena Regional Medical Center, White River Medical Center, and Baxter Regional Medical Center are new partners in September, and in May, Baptist Health Medical Center in Arkadelphia will be the last partner added this fiscal year. Julie Hall-Barrow, Ed.D. education director for the UAMS Center for Distance Health, said plans called for nine additional hospitals to join the program in the next fiscal year.

   In the first three months of the program, 14 patients across the state qualified for and received the SAVES evaluation. Two of those were deemed good candidates for t-PA.[5]

5. **New York:** New York created a comprehensive telemedicine system by addressing health disparities that existed in the gaps of stroke care across the state both in rural and urban areas. New York was unique and successful in that the state prioritized the political leadership and commitment not only to facilitate the development of stroke telemedicine, but also to create a key ally in conquering real and perceived barriers to implementation. The New York State Department of Health has been the catalyst in

[5] See http://arkansas.medicalnewsinc.com/news.php?viewStory=736

streamlining the process for hub consultants to become credentialed in spoke hospitals, an issue other telemedicine systems have struggled to tackle.

The issue of reimbursement is a hurdle and barrier to successfully develop a network that could be responsive to the needs of patients suffering stroke. Since September 2006, the New York Medicaid program recognizes "medically necessary emergency room and inpatient hospital consultation services as payable to physicians with a specialty designation providing consultations via an interactive audio and video telecommunications system." These communications must meet the Medicare standard of interactive audio and video. The consulting physician is reimbursed for a telemedicine consultation at the same payment level that applies to in-person consultations through the use of a telemedicine modifier code. Spoke hospitals that have the capacity to keep patients in their facility based on physician consultations from hub centers, can then seek normal reimbursement for in-patient hospital charges. This allows both institutions an opportunity to meet financial needs while providing the best treatment of care.
Many private sector health plans provide reimbursement for telemedicine consultations. It is important to note that New York currently has no law in place mandating reimbursement from private sector health plans and it of their free will to do so unlike legislation passed in Virginia.

One of the motivators for the state of New York was the commitment to their vision of telemedicine as a platform for more comprehensive telemedicine systems treating many conditions in addition to stroke in areas where access to specialty care has been an important barrier to care delivery. In this case, the policymakers' long-term goal is broader than the stroke initiative similar to the recommendations of this report.

6. **California:** In August, 2010 Governor Schwarzenegger announced the official launch of the California Telehealth Network. This project, operated by the University of California, plans to use telehealth and broadband technology to link 800 health care facilities statewide, focusing on urban and rural areas that are under served by the traditional health care system. This initiative is funded by $30 million in federal, state and private contributions, including $22 million from the Federal Communications Commission.

In addition to the states mentioned above, North Carolina has recently completed white papers similar to the Maryland DHMH white paper regarding this subject, including proposed plans for next steps.

<u>Maryland</u>

At the present time telemedicine consultation is not reimbursed by third party payers in Maryland. The Medicare provisions for telemedicine consultation apply only to professional fees and even then only to rural underserved areas and thus would not apply to suburban or urban hospitals that also struggle to provide acute specialty consultation in their Emergency Departments. Furthermore, before being able to set hospital rates for telemedicine, the

Maryland Health Services Cost Review Commission (HSCRC) would need baseline data in order to determine proper reimbursement.

The *American Recovery and Reinvestment Act of 2009* allocated significant funding to telemedicine and broadband in recognition of the growing importance of health information technology (health IT). Health IT initiatives currently underway in Maryland are aimed at expanding the adoption of electronic health records and implementing a statewide health information exchange. The value of telemedicine is significantly increased when providers are able to share the electronic health record as part of the patient evaluation process. The exchange of electronic health records requires the existence of a robust private and secure network that supports the exchange of clinical data and enables providers to query information. The Maryland Health Care Commission (MHCC) is the state agency responsible for advancing Health IT in Maryland. Telemedicine and health information technology (HIT) are complementary and synergistic. Telemedicine makes use of HIT, which is an enabling component to the delivery of health services over distances, providing fundamental tools and systems.

Credentialing

The Task Force requested input from the Maryland Board of Physicians regarding the credentialing issues relevant to the proposed state telemedicine system. The current licensure "barriers" and exceptions to those barriers are delineated in Health Occupations Article, Sec. 14-302. Please note that at this time, Washington, D.C. is the only adjoining state which meets the requirements of Sec.14-302(4). The telemedicine regulations clarify that these statutory exceptions from licensure apply to telemedicine:

> "Except as specified…, an individual shall be a licensed Maryland physician in order to practice telemedicine if one or both of the following occurs: A. The individual practicing telemedicine is physically located in Maryland; B. The patient is in Maryland."

A brief summary of the existing regulations for telemedicine, effective December 2009, note that the regulations govern the practice of medicine using telecommunications systems as an adjunct to, or replacement for, traditional face-to-face patient visits. The regulations do not apply to the use of electronic means by a treating physician licensed in Maryland who is consulting with another licensed health care provider with respect to an individual patient.

Telemedicine is the practice of medicine from a distance in which intervention and treatment decisions and recommendations are based on clinical data, documents, and information transmitted through telecommunications system. A physician-patient relationship is required. A Maryland-licensed physician may rely on an evaluation performed by another Maryland-licensed physician if one physician is providing coverage for the other. If this physician-patient relationship does not include prior in-person, face-to-face interaction with a patient, the physician shall incorporate real-time auditory communications or real-time visual and auditory communications for the patient evaluation.

The Board noted that the current telemedicine regulations were not intended to be an impediment to telemedicine. Instead, these regulations establish a framework for the safe practice of telemedicine for Maryland's citizens.

DRAFT

Legal Issues

On April 16, 2010 the Law & Health Care Program of the University of Maryland School of Law held a conference entitled "Roundtable on Legal Impediments to Telemedicine." A white paper developed from that meeting is included in Appendix D.

In the introduction the white paper noted that:

> "While the use of telemedicine is poised to grow, there are some impediments to its expansion. Chief among the barriers to greater utilization of the practice may be the current legal framework that constrains the practice of medicine across state lines. As technology has improved and enthusiasm to use telemedicine has grown, the regulatory structure in which medicine is practiced has not evolved to meet the unique legal issues raised by telemedicine. The current laws and regulations that govern medical practice at both the state and federal level reflect a time when physicians and patients lived and worked in the same location. Most laws and regulations relating to licensure, credentialing and privileging, and malpractice were never designed to enable or regulate health care that is provided remotely by a practitioner in another hospital or, as is becoming more common, in another state."

Roundtable organizers prepared case studies in the areas of licensure, credentialing, privileging and malpractice. Regarding licensure, in the future there may come a time when national medical licensure exists, or perhaps an out-of-state telemedicine consultation only form the basis of a medical license. However, at the present time such forms of licensure do not exist, and thus physicians providing telemedicine care in a Maryland state telemedicine system would need to maintain a Maryland state medical license.

Regarding credentialing and privileging, a similar conclusion was made. Specifically, in an ideal situation a physician would be able to be credentialed at all hospitals that participated in the telemedicine system via a single process, however, that process does not exist at this time due to CMS (Medicare) regulations. As noted in the white paper:

> "our present requirement is a duplicative and burdensome process for physicians, practitioners, and the hospitals involved in this process, particularly small hospitals, which often lack adequate resources to fully carry out the traditional credentialing and privileging process for all of the physicians and practitioners that may be able to provide telemedicine services."

Of note, part of the high costs of some of the telemedicine options profiled in this report are due to the cost of paying staff to maintain a multitude of active medical licenses and individual hospital privileges.

Lastly, the roundtable discussed the issues related to medical malpractice and medical professional liability (MPL) insurance. The white paper notes that:

DRAFT

> "Although there are few legal cases involving telemedicine, there is a widespread assumption that telemedicine may pose new complications to traditional malpractice claims, in particular jurisdictional, choice of law, and procedural issue and duty of care concerns. As the use of telemedicine grows, malpractice claims relating to telemedicine services may increase and, if so, these complications are likely to create a new body of law."

Issues of importance include proper informed consent of the patient, liability to maintaining the technological infrastructure, settling on a telemedicine "standard of care' as well as patient confidentiality. Recently, the state of California passed the Telemedicine Development Act which does provide some regulations regarding what the telemedicine "standard of care" would be. It is also interesting to note that in a recent survey of the Physician Insurers Association of America 18 of the 19 member companies reported that they had a provision to provide MPL coverage for telemedicine. However, 13 of those 18 companies have reported that they selectively deny MPL coverage for telemedicine for a variety of reasons (e.g. out of state activities).

In conclusion the white paper stated that:

> "Telemedicine is moving ahead on many fronts -- the technology is there, the willingness of practitioners to provide and patients to accept telemedicine is there, and even the funding is there. However, in some ways, the law is not there. The legal impediments that face telemedicine are not capricious – requirements for licensing, credentialing, and privileging were put in place, for the most part, to ensure that patients are provided appropriate care by properly trained physicians. The law is constantly evolving but, in the case of the rapidly growing area of telemedicine, may not be evolving fast enough to allow and foster the field to grow. Given telemedicine's promise of providing cost-effective care to underserved populations, it may be time to give the law a little push in the right direction. The purpose of the Roundtable was to bring a diverse group of high level telemedicine stakeholders together to meet, issue spot, and discuss the principles that should underlie legal reform aimed at encouraging telemedicine. The issues and principles identified in this paper are designed to further the dialog in the hope that the promise of telemedicine is not dimmed by rules that were designed before a doctor and patient could meet virtually."

V. Administration

Administration of a state telemedicine system would be a significant undertaking. The responsibilities of the organization running the system would include:

- In cooperation with both public and private stakeholders to develop criteria for the Maryland Telemedicine Network as well as design requirements for the IT infrastructure
- Verify the credentials of the on-call specialists
- Maintain the on-call schedule
- Manage the financial aspects of the call schedule
- Train the personnel at both the hub and spoke facilities
- Oversee maintenance of the telemedicine infrastructure

DRAFT

- Ensure compliance with any and all relevant current state and/or federal regulations
- Manage the program in relation to other state initiatives and programs as well as coordinate with other state agencies
- Certify and re-certify participating hospitals regarding their ability to participate in the state telemedicine system
- Ongoing quality improvement, including research related to problems with the system and initiatives to improve the system

Although the telemedicine infrastructure could be contracted out to a private company, administration of the telemedicine system should be centralized into a single state agency. This would ensure not only system integrity and quality provided by the contracted vendor(s), but also avoid any appearance of conflict of interest from any one health system or private concern.

VI. Conclusions and Recommendations

In this report the Telemedicine Task Force has outlined both the great promise of telemedicine to address health care quality and cost issues in the state of Maryland, as well as many of the challenges and barriers that would need to be overcome in order to achieve the goal of a state telemedicine system. After careful consideration of the current status of telemedicine in Maryland and the U.S., the Telemedicine Task Force reached the following conclusions and makes the following recommendations.

- The state should move forward to create such a system, the Maryland Telemedicine Network (MTN).
- Identify a state commission or other such official to develop the necessary criteria and design requirements of the MTN. The MTN should be a private-public partnership.
- Identify funding source(s) to ensure a sustainable state telemedicine program.
- After the MTN criteria and design requirements are determined, contract with a private IT company to develop and maintain the IT infrastructure.
- Identify an administrative infrastructure to oversee the MTN and develop an ongoing quality improvement program for the MTN.
- Make legislative and regulatory changes to simply the credentialing and privileging process and to address malpractice and liability issues, as appropriate.

- Neighboring states and the District of Columbia should be allowed to participate in the MTN.

- The MTN will need to be synergistic with the Maryland Health Information Exchange.

DRAFT

Appendix A: Maryland Telemedicine Task Force Members

(listed alphabetically)

Co-Chairs

Eric M. Aldrich, M.D., Ph.D.
Associate Professor of Neurology and Physical Medicine & Rehabilitation
Johns Hopkins School of Medicine
Vice President for Medical Affairs
Howard County General Hospital

Barney Stern, M.D.
Professor of Neurology
University of Maryland School of Medicine
Director, Clinical Stroke Program
University of Maryland Medical System

Task Force Members

Richard Alcorta, M.D.
Office of the Medical Director
Maryland Institute for Emergency Medical Services Systems (MIEMSS)

Anna Aycock, B.S.N., R.N., M.H.A.
Director Stroke Program
Maryland Institute for Emergency Medical Services Systems (MIEMSS)

Robert Bass, M.D.
Executive Director
Maryland Institute for Emergency Medical Services Systems (MIEMSS)

Patricia Cameron
Office of Government Affairs
MedStar Health

Genoveffa Devers, R.N., M.H.
Washington County Health System Stroke Unit

Dianne Feeney
Maryland Health Services Cost Review Commission (HSCRC)

Adrian Goldszmidt, M.D.
Director
Sinai Hospital of Baltimore Stroke Center

DRAFT

Amie Hsia, M.D.
Medical Director
Washington Hospital Center Stroke Center

Surina Ann Jordan, Ph.D.
Zima Health
Chair, Maryland State Advisory Council on Heart Disease and Stroke

Frank Monius
Vice President for Administration
Maryland Hospital Association

Mary Mussman, M.D.
Physician Advisor
Maryland Department of Health and Mental Hygiene (DHMH)

Alex Nason
Johns Hopkins Health System Office of Telemedicine

Laura Pimentel, M.D.
President
Maryland Chapter of American College of Emergency Physicians (ACEP)

C. Irving Pinder Jr.
Maryland Board of Physicians
Maryland Department of Health and Mental Hygiene (DHMH)

Jill Porter
Public Policy Analyst
Maryland Department of Health and Mental Hygiene (DHMH)

David Sharp
Director, Center for Health Information Technology
Maryland Health Care Commission (MHCC)

Nicole Stallings, MPP
Director, Maryland Health Quality and Cost Council
Maryland Department of Health and Mental Hygiene, Office of the Secretary

Jennifer Witten, M.B.A.
Director of Government Relations, Maryland and DC
American Heart Association/American Stroke Association

Christopher Wuerker, M.D.
Department of Emergency Medicine
Washington Hospital Center

DRAFT