

Appendix E: State Stroke Systems Planning

The mission of the American Heart Association / American Stroke Association (AHN/ASA) is to reduce disability and death from cardiovascular disease and stroke. To support this mission, AHN/ASA identifies and evaluates strategies to improve stroke awareness and prevention and to enhance acute treatment and rehabilitation options. As a voluntary committee was developing the Recommendations for the Establishment of Stroke Systems of Care (Stroke, 2005), the AHN/ASA identified the possibility that if every state exemplified the components of this model for stroke care, the result could facilitate significant progress toward the mission and 2010 impact goal, a 25% reduction in coronary heart disease, stroke and risk.

A stroke systems approach involves coordinating stroke care along the entire stroke health continuum, from primary prevention through rehabilitation. A systems approach is necessary to improve how stroke is treated so that patients will have access to the most advanced treatment in centers that are best equipped to deal with the critical, time-sensitive needs of stroke patients.

Each state nationwide designated a AHA/ASA staff representative to lead a multi-year program to coordinate the stroke systems planning. In addition to continuing much of the work on stroke initiatives aimed at improving the system of care, each staff representative was charged with convening and/or facilitating a state leadership group of volunteers and stakeholder organizations (if one did not already exist). The leadership groups typically include organizations such as the Department of Health, state-based healthcare provider associations, state EMS authorities/offices, quality-improvement organizations, and stroke-focused coalitions. These leadership groups are charged with viewing the stroke system from a state level to evaluate available resources and partners and to continue the dialogue and activities designed to improve stroke care in each state.

The essential components of a coordinated system of stroke care were outlined by the national core of stroke experts on the Development of Stroke Systems in the document entitled Recommendations for the Establishment of Stroke Systems of Care (Stroke, 2005). This document recommends that any coordinated stroke system should promote patient access to the full range of services associated with stroke prevention, treatment and rehabilitation, including these key components:

- Primary Prevention
- Notification and Response of Emergency Medical Services for Stroke
- Acute Treatment for Stroke
- Sub-Acute Stroke Care and Secondary Prevention for Stroke
- Rehabilitation of Stroke Patients

While the AHN/ASA may bring many resources to bear on many or all of these components, the state-level planning effort is intended to identify

- all of the possible partners,
- its own unique stroke care assets and
- its own set of challenges.

By initiating the multi-year program, it should become clear

- where the gaps are,
- where the greatest needs are,
- where the successes and best practices are.

That sets a foundation for sharing information from state to state in a way that accelerates the improvement of stroke systems of care.

Development of Virginia's Stroke Systems of Care

The development of an invested team of recognized experts to lend their expertise to building Virginia's stroke systems of care was critical for achieving credibility, buy-in, and forward movement in building a fluid stroke systems plan for the state. This team of stroke experts has participated in a closely managed process throughout 2006, structured to make wise use of their limited time, and channel their efforts into creation of viable strategies that can be implemented across the state.

Bon Secours Health System Richmond & Stroke Systems Consulting	Stroke Survivor
Carilion New River Valley Medical Center Dept of Physical medicine & Rehabilitation	University of Virginia, Radiology Department
Centra Health, Inc., Lynchburg General Hospital	UVA Health System, Dept of Adult Acute Care & Neuroscience Programs
Central Virginia Emergency Associates	UVA STROKE CENTER, Dept of Neurology
Central Virginia Health Services, Inc	Virginia Commonwealth University School of Medicine, Department of Family Medicine Practice-based Research Network: ACORN
CJW, Johnston-Willis Campus (HCA)	Virginia Department of Health Office of EMS
Commonwealth Neuro Specialists, PC	Virginia Department of Health, Cardiovascular Disease Project
INOVA Health System, Dept of Community Health	Virginia Hospital and Healthcare Association
INOVA Rehabilitation Center, Mount Vernon Hospital	Virginia Organization of Health Care Social Workers (VOHCSW)
Montgomery Regional Hospital	Virginia Primary Care Association
OEMS Medical Direction Committee	Virginia Rural Health Association

The group fleshed out a draft core plan that comprehensively addresses all of the components in a stroke system of care, and the policy recommendations in the ASA 'white paper.' The core plan outlines much that needs to be done, and a number of the critical elements are already being addressed.

Movement on Core Work Plan:

- EMS standardized stroke scale formalized
- EMS data project and mapping underway
- EMS training needs assessment underway
- EMS stroke satellite training & DVD done
- EMS standardized enhanced stroke training in development for online access
- Hospital Stroke Survey, validated, mapping underway
- Virginia Stroke Systems Ambassador service
 - guidelines/parameters developed; recruitment and orientation of panel completed
 - Rolled out to stroke community
 - Target participation by SOC hospitals close to PSC status
- Advocacy:
 - Achieved resolution commending Primary Stroke Centers on certification, in 2007 legislative session.
 - Achieved support from Virginia Joint Commission on Health to convene work group/task force to address stroke issues.
- Promotion of Heart/Stroke Recognition Program through Va project
- Development of Virginia Stroke Systems Web environment (for prof ed, resources, consultation)

Next Steps

- Development of Stroke Task Force/work group by Virginia Joint Commission on Health
- Assess gaps in plan
- Determine vehicles, partners, resources for movement on priorities
- Define and pursue funding where needed
- Engage stakeholders, as appropriate

Under consideration for development:

- Social marketing campaign
- Enhancing/promoting public ed programs for high risk populations
- Build strategies to enable physicians to treat-to-target re CVD and stroke
- Standardize enhanced EMS stroke training across state
- Public education about best transport options (family transport vs **9-1-1**)
- Public access of hospital stroke survey results
- Development of telemedicine and transport agreements for acute care facilities
- Promotion of Heart/Stroke Recognition Program through state agencies
- Promotion/provision of resource tools such as order sets, protocols, patient target data sheet, hosp discharge summaries for PCPs, JCAHO application toolkit, standardized residual impairment evaluations, guide to rehab categories of service and availability of care, vehicles to promote communication between rehab providers and PCPs, etc

Appendix E: Virginia Stroke Systems of Care: Project List May 2007

*(See table of abbreviations at **end** for interpretation of acronym)*

Projects Overarching All Components:

- Development of Virginia Stroke Systems web pages to provide online resources to health professionals addressing stroke in Virginia.
- Advocacy –
 - Educating public about You're-The-Cure (YTC) grassroots network that enables their voice to be heard on stroke policy issues and increasing stroke stakeholders' membership.
 - Orchestrating stroke advocates' participation in educating policy makers about stroke (via legislative reception, state lobby day, National lobby day, direct contact, etc).

Prevention/Community Education:

NIH/NINDS Know Stroke program • Community education on signs and symptoms of stroke and urgent response.

- Promote Safe Routes to School (SRTS), a grant funded initiative designed to incorporate phys activity into students daily life through elimination of environmental barriers.
- Certified Primary Stroke Centers and other hospitals providing community education on stroke modules for the public.
- Share AHA/ASA online cardiovascular education lesson plans.
- Search Your Heart (SYH) stroke module - implemented in over 100 churches in central, eastern, and northern Virginia.
- Power To End Stroke (African-American stroke education campaign), development and funding of ambassadors in high **risk** areas of state.
- "Emergency Protocols for Non-Medical Facilities" posters under distribution to work sites.
- VDWSA Medical Emergency Response Plan (MERP) Guide developed, in final reviews and nearly ready for distribution to employers.
- AHA Start! walking campaign for worksites.
- Virginia NCQA Heart/Stroke Recognition Program Project working to get physicians recognized for meeting identified measures.

- Fourteen hospitals in Virginia actively utilizing GWTG Stroke (approx 17% of Va hospitals).
- Health Disparities Collaboratives being implemented in Community Health Centers (CHC) through state-based collaborative structure.

Blood Pressure Measurement Specialist Certification training being provided through Virginia Department of Health. (Blood Pressure Measurement Specialist (BPMS) certification training via train-the-trainer classes for health professionals.)
Pilot study underway to explore efficacy of embedding treatment guidelines into EMR programming to generate prompts at point of care (ACORN - Partnerships for Prevention).

EMERGENCY MEDICAL SERVICES

- OEMS (Office of Emergency Medical Services) Satellite training program *Pre-hospital Cure of the Stroke Patient* developed and available via web training system.
- Tracking of time of onset and use of Cincinnati Stroke Scale standardized through OEMS Medical Direction Committee.
- Stroke training provided annually at EMS Symposium for field personnel throughout the state
- Standardized enhanced stroke training under development to be distributed to all instructors in state and made available online for download by instructors. Pre-notification of receiving hospital Incorporated.
- EMS data compilation and early assessment completed; interventions being developed to improve field response.
 - Mapping of data depicting EMS response to stroke underway - will overlay with acute care facility locations and roles

ACUTE STROKE CARE

- Hospital survey and analysis completed to identify hospital roles across the state. 100% of Virginia hospitals providing acute stroke care participated. Web-based vehicle for ongoing updating under development.
- Notification of survey status provided to hospitals before public dissemination, with opportunity to update responses.
- Mapping of hospital **roles** nearly completed.
- ASTP kits distributed to all acute stroke care hospitals in the state.
 - Virginia Stroke Systems Ambassador Panel launched and in active operation -- provides expert opinion to stakeholders on acute treatment issues.
 - AHA/ASA supporting use of Get With The Guidelines-Stroke in participating hospitals.
- Exploring current usage of telemedicine and its availability/applicability for VA hospitals.

SUB-ACUTE CARE & SECONDARY PREVENTION

- Fourteen hospitals in Virginia actively utilizing GWTG Stroke (approx 17% of Va hospitals).
- Promoting and providing Blood Pressure Measurement Specialist certification training via train-the-trainer classes for health professionals.
- Funding secured through ASA/VDH NCQA HSRP Project to help offset physicians' costs in achieving recognition.
- Development of Secondary Prevention pocket guide underway for distribution to Physicians.
- See Prevention section for community education and provider strategies impacting both Prevention and Secondary Prevention

STROKE REHABILITATION

- Researching tools that define the different levels of rehab along the continuum (for patients, families, Case Managers, Discharge Planners) and makes recommendations for rehab placement based on patient circumstances.

- Developing template/seeking funding to support implementation of Central Virginia Stroke Support Group Development project, positioning stroke group members as agents of change to impact advocacy and community education on stroke.

Addendum
Table of Abbreviations, Virginia Stroke Systems Work Plan

AARP	American Association of Retired Persons	EMD	Emergency Medical Dispatch
AHA/ASA	American Heart Association/American Stroke Association	EMS	Emergency Medical Services
ACORN	Ambulatory Care Outcomes Research Network (at Virginia Commonwealth University)	D&S	Drip and Ship (Feeder/Transfer) (hospital category)
AHG	Alliance for a Healthier Generation	EHR	Electronic Health Records
AHRQ	Agency for Healthcare Research and Quality	EMR	Electronic Medical Records
ALLHAT	Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial	ER	Emergency Room
ASTP	Acute Stroke Treatment Program	FIPS	Federal Information Processing Standard
BRFSS	Behavioral Risk Factor Surveillance Survey	GWTC	Get With The Guidelines
CDC	Centers for Disease Control And Prevention	HDSP	Heart Disease and Stroke Prevention
CEU	Continuing Education Unit	HP	Healthy Pathways (statewide coalition with focus on schools, medical, faith, and community/work site)
CME	Continuing Medical Education	HR	Human Resources (ref Directors' Associations)
CMS	Centers for Medicare and Medicaid Services	HSRP	Heart Stroke Recognition Program (for Physicians)
CVD	Cardiovascular Disease	JCAHO	Joint Commission on Accreditation of Hospitals
CSC	Comprehensive Stroke Center (hospital category)	MDC	Medical Direction Committee
DMAS	Department of Medical Assistance Services	MERP	Medical Emergency Response Plan
		NCEP	National Cholesterol Education Program

NCQA	National Center for Quality Assurance	SYH	Search Your Heart (faith based community education curriculum)
NHBPEP	National High Blood Pressure Education Program	tPA	Tissue Plasminogen Activator
NIH	National Institutes of Health	UVA	University of Virginia
NINDS	National Institute of Neurological Disorders and Stroke	VAFC	Virginia Association of Free Clinics
OEMS	Office of Emergency Medical Services	VAFHK	Virginia Action For Healthy Kids
OHPP	Office of Health Policy and Planning	VAFP	Virginia Academy of Family Physicians
PCP	Primary Care Provider	VCU	Virginia Commonwealth University
PSA	Public Service Announcement	VDH	Virginia Department of Health
PSAP	Public Safety Answering Points	VHHA	Virginia Hospital and Healthcare Association
PSC	Primary Stroke Center (hospital designation)	VHI	Virginia Health Information
QI	Quality Improvement	VHQC	Virginia Health Quality Center
QIO	Quality Improvement Organization	VITA	Virginia Information Technology Agency
ROI	Return On Investment	VOHCSW	Virginia Organization Of Health Care Social Workers
rt-PA	Recombinant Tissue Plasminogen Activator	WAV	Well Adult Visit
SOC	Standard Of Care (hospital category)	WMM	When Minutes Matter (ASA senior stroke education program)
SRTS	Safe Routes To School	YTC	You're The Cure (AHA grassroots advocacy network)
S/S	Signs and Symptoms		
SSP	Stroke Systems Plan		

APPENDIX F – NETWORK INFRASTRUCTURE IN VIRGINIA

Telecommunications Network Infrastructure in Virginia

During the past decade, the telecommunication landscape in Virginia has changed dramatically. Investments in infrastructure by the private and public sectors (local, state, federal), Virginia Tobacco Commission³, and others have extended connectivity exponentially beyond where we were even five short years ago. Virginia currently has active deployments of numerous technologies across the state including (but not limited to): open access fiber, triple-play cable, wireless (802.11 and licensed spectrum), Wi-Max, broadband over powerline (BPL), EVDO, and FIOS. However, despite all of the investment and technical industry advancements, there are still locations in Virginia that do not have access to reliable and **affordable** broadband telecommunication infrastructure. In an attempt to fill the gaps and to provide cost parity (rural v. urban) for local telecommunication needs while meeting the internal infrastructure needs of Commonwealth agencies, Virginia has invested in two primary statewide networks – Network Virginia and the Commonwealth of Virginia Network (COVANET).

Network Virginia

Established in 1996, Network Virginia (NWV) is a program of Virginia Tech to promote early access to advanced network technology and services throughout Virginia. Network Virginia's goal is to improve the quality of life and enhance economic competitiveness in our region. Support services range from leveling the playing field in rural and underserved communities to providing the world's most advanced research network infrastructure for regional universities and labs. The network currently supports an active community of scientists, educators, economic developers, government, regulators, and businesses. Currently Network Virginia is an active participant in the following initiatives:

- National LambdaRail
- Internet2
- Mid-Atlantic Terascale Partnership
- Mid-Atlantic Crossroads
- VT Capitol Region

At its core Network Virginia is a consortium of local exchange companies in Virginia led by Virginia Tech and Verizon, providing local access and intraLATA switching services. Verizon is the prime

³ During the past decade, the Virginia Tobacco and Community Revitalization Commission (a 31 member Commission created in 1999 by the General Assembly to promote economic developed in Southside and Southwest Virginia) has invested more than \$61 million dollars in open access broadband infrastructure in Southside and Southwest Virginia.

contractor for the local exchange companies, called the Vision Alliance, and coordinates all network management and order processing within the consortium. An interLATA backbone is provided by Sprint. The legacy NWV backbone is operated with three ATM switches strategically located around the state to provide interconnection points for Vision Alliance switches. Recently, Sprint added a core IP backbone network including a diverse mesh of OC12c packet over SONET (PoS) links. Sprint is also providing Internet backbone gateways in Washington, Roanoke and Richmond each at OC12c capacity for a combined aggregate Internet access capacity of over 4 gigabits per second. This Internet service is open to all participants. Sprint also provides a gigabit ethernet gateway from the IP backbone to a National LambdaRail / Internet2 gigaPOP facility operated by Virginia Tech in the National Capital Region. Serving an estimated 1.3 million people, NWV offers access to a rich array of educational and information resources. Originally designed to handle advanced multimedia applications for research and education, the network is open to anyone including businesses.⁴

Commonwealth of Virginia Network (COVANET)

In 2000, Verizon (then MCI) built and designed COVANET, an integrated data and voice communications network to serve as the platform for Virginia's e-government initiatives. COVANET was designed to deliver advanced communications services to state agencies, local and county governments, public universities, and schools. COVANET combined public Internet and private frame relay and ATM technologies. The architecture of the COVANET network includes diverse OC-12 trunking throughout the Commonwealth of Virginia and trunk facilities between all ATM switches to support full and automatic network restoration. This redundant network is overlaid on a SONET ring architecture. In addition to frame relay transport, COVANET also provided state agencies with features such as FR/ATM Service Interworking, PVCs to the Internet, and customer network management reporting.⁵

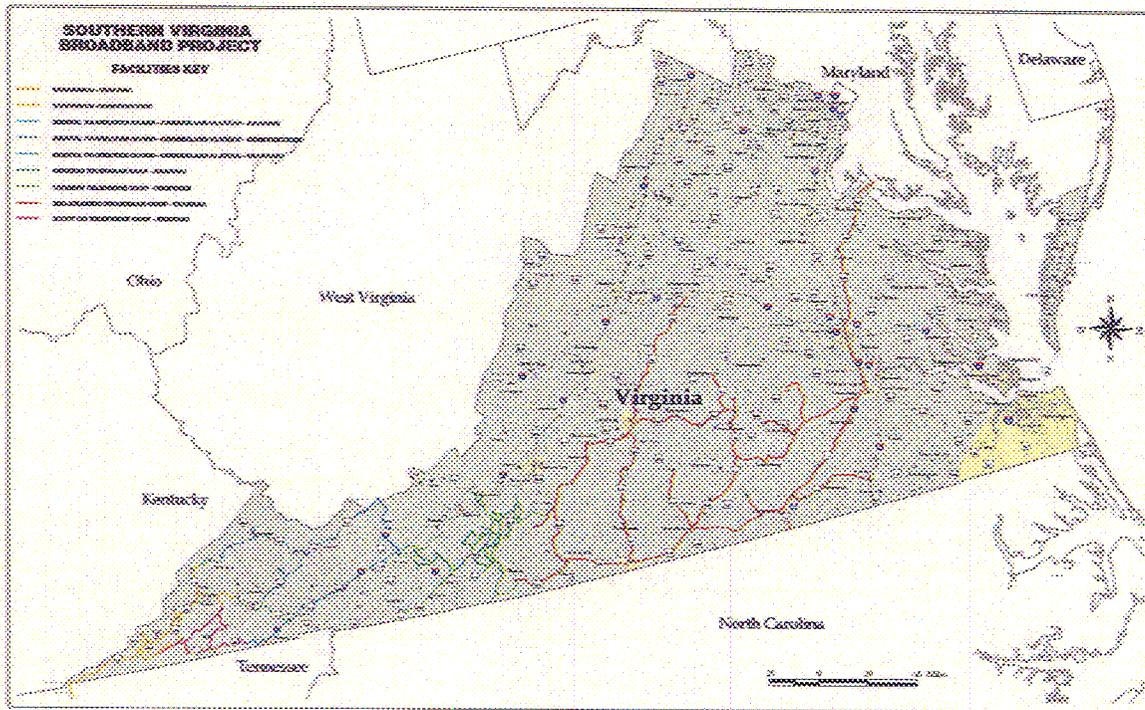
Virginia Tobacco and Community Revitalization Commission Funded Networks

Aside from the Commonwealth investments in Network Virginia and COVANET, the Virginia Tobacco Commission is the largest single source of funding for telecommunication projects in the Commonwealth. Recognizing that robust infrastructure and affordable connectivity is paramount to economic development the Commission has concentrated their funding on the construction and lighting of open access fiber networks throughout the Southside and Southwest Virginia Tobacco Counties. To date, the Tobacco

⁴ Information obtained from the Network Virginia website (<http://www.networkvirginia.net/netva>)

⁵ Information obtained from the Verizon COVANET website (http://www.verizonbusiness.com/us/govt/state_solutions/covanet/)

Commission has provided more than \$65 million dollars in funding and has partnered with localities and providers throughout the region to bring the dream of economic parity to fruition. Partners to date include: Cumberland Plateau and **LENOWISCO** Planning Districts, Bristol Virginia Utilities, Mid-Atlantic Broadband Cooperative, Citizen's Telephone, and Scott County Telephone to deploy fiber from Lee County (far Southwest Virginia) to Emporia.



APPENDIX G -- BVU NETWORK DIAGRAMS -- USE CASE 2

