

**Testimony to the Subcommittee on Specialty Crops, Rural Development
and Foreign Agriculture**

Committee on Agriculture

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Chairman McIntyre, distinguished members of the subcommittee, my name is Dr. Karen Rheuban. I am a pediatric cardiologist, and also serve as Senior Associate Dean for Continuing Medical Education and Medical Director of the Office of Telemedicine at the University of Virginia Health System in Charlottesville. I am also the President-elect of the American Telemedicine Association, a member of the Board of Directors of the Center for Telemedicine and E-health Law, and President of the Virginia Telehealth Network.

It is an honor and a privilege to provide testimony that will address:

- a) **the status of rural healthcare, and in particular, data regarding healthcare in rural Appalachian Virginia**
- b) **the role of telemedicine in the delivery of healthcare and educational services to rural Americans,**
- c) **the enormous benefits of federal programs that support the development and deployment of telehealth technologies and networks, and**
- d) **opportunities to further expand innovation in telemedicine and e-health so as to enhance the quality of life of all Americans.**

A. The status of rural healthcare

Rural patients face challenges of access to quality healthcare. Twenty percent of our US population resides in heterogenous rural communities which vary in character from towns adjacent to suburban areas to remote and/or frontier communities with extremely low population densities. Although all Americans face challenges in access, quality and cost of care, disparities attributable to a host of factors disproportionately impact the health of our rural populations.

The Institute of Medicine, in its report, “The Future of Rural Healthcare”, cites “core health care services” of primary care, emergency medical services, long term care, mental health and substance abuse services, oral health and other services as being considerably less accessible in rural communities.¹ Access to specialty care presents an even greater challenge. The implications of a lack of timely access to quality healthcare are well known, and include delayed diagnoses of preventable or treatable illnesses and a higher cost of care, when and if such care is received.

Rural patients tend to be older, and participate in adverse health behaviors (smoking, lack of fitness, obesity) which leads to chronic diseases at rates higher than their urban counterparts. The challenges of a less robust infrastructure in support of economic development, lower educational levels of achievement, high rates of uninsured status, and the financial burdens of travel for healthcare all contribute to the health disparities of rural citizens. As an example, although nationally we have increased access to screening mammography over the last decade, due to the impact of distance, limited income, and uninsured status, women residing in rural areas are screened for breast cancer at significantly

¹ Quality Through Collaboration, The Future of Rural Health, Institute of Medicine, National Academies Press, 2004.

lower rates than women residing in urban areas, particularly if travel more than twenty miles for screening is required.^{2,3}

It has been forecast that our nation faces a shortage of physician providers, in the range of 85,000 to 200,000 physicians by 2020.^{4,5} Lack of access in rural areas is exacerbated by the limited numbers of specialists who practice in rural communities and the limited resources generally available in those communities. Attracting health professionals to rural communities remains a daunting task; retaining those health professionals is equally difficult. Rural healthcare providers tend to work longer hours, see more patients, lack cross coverage opportunities and experience a greater sense of isolation than their urban counterparts. Rural health professionals have been slower to adopt electronic medical records in their practices.

To craft a strategy for improving the health of patients residing in the most rural and underserved regions of the Commonwealth of Virginia, in collaboration with Virginia Department of Health, the University of Virginia recently conducted an analysis of the health status, the health workforce and relevant economic indicators impacting the citizens of the Coalfields regions of western Appalachian Virginia.⁶ These rural regions of Virginia are: 1)

² Peek, MA, Disparities in Screening Mammography: Current Status, Interventions, and Implications, *J Gen Intern Med*. 2004 February; 19(2): 184–194.

³ Brustrum, JE, Going the Distance: How Far Will Women Travel to Undergo Free Mammography? *Military Medicine*, 2001, 166 (4), 347-349.

⁴ Cooper, RA, Weighing the evidence for expanding physician supply, *Ann Intern Med* 2004; 141:705-714.

⁵ Blumenthal D. New steam from an old cauldron: the physician supply debate, *N Engl J Med*: 2004;350:1780-1787.

⁶ Cattell Gordon, D, “Healthy Appalachia”, Report to the Southwest Virginia Health Facilities Authority, May 2008

economically depressed, 2) medically underserved, and 3) geographically isolated. The findings of that report showed that:

- 20% of the residents of the region live below the poverty level as compared to 10.2% for Virginia
- Only 62% of the region's population has completed high school and 11% completed college compared with 82% and 30% respectively for Virginia,
- Per-capita income levels in the region are a little more than half of the levels of state for 2000
- The numbers of unemployed and those not in the work force is twice that of the rest of the Commonwealth
- 19% of adults in the region do not have health insurance coverage
- The death rate from cardiovascular disease is 1.7 times higher than that of the Commonwealth of Virginia.
- The death rate from solid tumors is 1.4 times greater than that of the state.
- The probability of dying of chronic lung disease in this area is twice the probability of dying of the same cause elsewhere in Virginia.
- The mortality rate in the region from diabetes is nearly twice the mortality rate of the state.

Although University of Virginia physicians regularly staff specialty outreach clinics in many rural regions of the Commonwealth, the ongoing need for locally provided specialty services is very great. When one considers the cost of overnight stays, lost time from work, the increasingly high cost of fuel and other automotive expenses, travel for healthcare imposes great burdens on our rural families.

Tomorrow, I will join two hundred of my University of Virginia Health System colleagues to participate in the Remote Area Medical (RAM) Clinic held at the Virginia-Kentucky Fairgrounds, a six hour drive from Charlottesville. At that annual weekend event, more than 3000 patients from Appalachian Virginia and surrounding states receive free

medical care, dental care, vision care, patient education and cancer screenings. Patients arrive at all hours of the night to stand in line to obtain a ticket for entry to the clinic, and then wait uncomplainingly, often in the hot sun, to receive services. At that clinic, healthcare is provided in barns and in tents (see photograph, below).



Photograph: Remote Area Medical Clinic (courtesy St. Mary's Health Wagon)

Rural Americans experience disproportionate disparities in healthcare as compared to their urban counterparts.

B. The role of telehealth in the delivery of services to rural Americans:

Telehealth can reduce many of the barriers of access to locally unavailable healthcare services. The societal integration of advanced technologies into everyday venues has profound implications for the development, support and delivery of a new paradigm of healthcare services in the digital era. The powerful tools of health information technologies are critical to the transition from a culture in which health related services are primarily delivered in a balkanized model on an episodic basis to an integrated systems approach focused on disease prevention, enhanced wellness, chronic disease management, decision support, quality, ease of access and patient safety. Through the incorporation of such tools

and technologies, clinicians will be able to satisfactorily manage the exponentially expanding volumes of medical information, research and decision support analytic tools.

The incorporation of telehealth technologies into integrated systems of healthcare offers tools with great potential to address the challenges of access, specialty shortages, and changing patient needs in *both* the rural and urban setting. Clinical services delivered via telehealth technologies span the entire spectrum of healthcare, and across the continuum from prematurity to geriatric care, with evidence based applicability to more than 50 clinical specialties and subspecialties. Cardiology, dermatology, ophthalmology, neurology, high risk obstetrics, pulmonary medicine, mental health, pathology, radiology, critical care, and home telehealth, are but a few of the many applications in general use, and for which a number of specialty societies have developed telehealth standards.^{7,8,9,10,11} These services can be provided in live-interactive modes and some, asynchronously, using store and forward applications. Examples of the latter include the acquisition of digital retinal images of patients with diabetes by a trained nurse. These images can be sent for review by a retinal

⁷ Williams, JM et al, Emergency medical care in rural America, *Ann Emer Med* 2001; 38(3):323-327.

⁸ Burgiss, SG et al, Telemedicine for dermatology care in rural patients, *Telemed Journal* 1997; 3 227-33

⁹ Chiang, Michael, Lu Wang; Mihai Busuioc; Yunling E. Du et al, Telemedical Retinopathy of Prematurity: Diagnosis, Accuracy, Reliability, and Image Quality *Arch Ophthalmol*, 2007; 125 1531 – 1538.

¹⁰ Flowers, CW et al, Teleophthalmology: rationale, current issues, future directions, *Telemed J*, 1997; 3(1): 43-52

¹¹ Breslow, MJ, Effect of a multiple site intensive care unit telemedicine program on clinical and economic outcomes: An alternative paradigm for intensivist staffing, *Crit Care Med* 2004 32(1): 31-38

specialist to identify patients at risk for diabetic retinopathy, the number one cause of blindness in working adults. Digital images can be integrated into the patient's electronic medical record to follow changes over time. In these and so many other applications, telehealth supports the goals of the federal Healthy People 2010 initiative, and is aligned with the President's 2004 Executive Order to "advance the development, adoption, and implementation of health care information technology standards nationally through collaboration among public and private interests".¹²

The aging of our population has already created increased demand for specialty healthcare services to address both acute and chronic disease in the elderly. Such a demand, in the face of anticipated provider shortages, requires a fundamental shift from the model of physician centered care to one focused on patient centered care using interdisciplinary teams, evidence based medicine, the use of informatics in decision support and telehealth technologies where specialty care services are either not locally available or for other consultative needs. As an example, nationally, only 2% of eligible (ischemic) stroke victims receive brain saving thrombolytic therapies, primarily because this treatment must be administered within three hours from the onset of an ischemic stroke under the direction of a trained neurologist. The use of telehealth technologies offers immediate access to stroke

¹² George W. Bush, Executive Order, Incentives for the Use of Health Information Technology and Establishing the Position of the National Health Information Technology Coordinator, April 27, 2004.

neurology and neurointensive care with improved outcomes, and an increase in the delivery of thrombolytic therapies to as many as 80% of eligible stroke patients^{13,14,15}.

With the aging of the population and greater numbers of patients with chronic illness, home telehealth, home monitoring tools and biosensor devices offer an effective mechanism to improve health, and provide early intervention where appropriate. The evidence has demonstrated improved outcomes and reduced hospitalizations for patients with congestive heart failure, diabetes, and other chronic diseases through the use of home monitoring and home telehealth technologies.^{16,17}

Telehealth technologies should be viewed as integral to rural development. Data from some telehealth providers have indicated that more than 85% of patients seen via telehealth technologies remain within their community healthcare environment, resulting in a reduction in unnecessary transfers, less hospital lost revenue, as might occur with patient transfers, and enhanced economic viability of the community hospital. A viable community healthcare environment and workforce ultimately provides incentives for the relocation of

¹³ Schwamm, LE et al, Virtual telestroke support for the emergency department evaluation of acute stroke, *Acad Emer Med* 2004; 11(11) 1193-1197

¹⁴ Vespa, P, Intensive care unit robotic telepresence facilitates rapid physician response to unstable patients and decreased cost in neurointensive care, *Surg Neurol*, 2007 (67) 331-337.

¹⁵ Fessler, R, Michigan Stroke Network, An 18 month update, 3rd Annual Remote Presence Clinical Innovations Forum, Santa Barbara, CA, July 18, 2008.

¹⁶ Field MJ and Grigsby, J Telemedicine and remote patient monitoring, *JAMA* 2002;288(4):423-425.

¹⁷ Noel, HC, Home telehealth reduces healthcare costs, *Telemedicine J and E Health*, 2004, 10(2): 170-183

industry, thereby enhancing community economic development. The benefits of shared utilization of bandwidth for other applications in rural communities cannot be overstated.

In an effort to address the significant rural-urban disparities in the Commonwealth of Virginia, we established the University of Virginia Telemedicine program in 1995, specifically to enhance access to specialty healthcare services and health related education for distantly located patients and health professionals using broadband telecommunications technologies. With federal and state support, we have created and serve as the hub of a 60 site network of community hospitals, critical access hospitals, a veteran's hospital, veteran's clinics, federally qualified community health centers, rural clinics, prisons, schools and state health department clinics located primarily in rural communities in western, southwestern, central and eastern Virginia.

To date, we have facilitated more than 12,500 patient encounters linking remotely located patients and our University of Virginia health professionals representing more than 30 different medical and surgical subspecialties. These services are provided on a scheduled basis or emergently, as needed, at any time, day or night. We offer store and forward services such as screenings for diabetic retinopathy or breast and cervical cancer. We have provided more than fifty thousand radiographic interpretations through our teleradiology program. We provide live interactive consultations using traditional models of video-conferencing and critical care applications, such as acute stroke evaluation and treatment, using traditional videoconferencing and robotic "remote presence" technologies connecting emergency physicians with stroke neurologists. We have saved lives, supported timely interventions, and spared patients and their caregivers unnecessary travel and expensive transfer when feasible.

At the Remote Area Medical Clinic in Wise, in addition to on-site clinical services, we offer telemedicine facilitated subspecialty consultations and mobile digital mammography services transmitted over broadband linkages for immediate interpretation by our radiologists.

Through our telehealth network, we have broadcast thousands of hours of health professional, student and patient education programs otherwise not locally available. We offer access to cancer clinical trials for patients and collaborative tumor boards for health professionals serving those patients.

C. The enormous benefits of federal programs that support the development and deployment of telehealth technologies and networks (such as the USDA Rural Utilities Service Distance Learning and Telemedicine Grant Program).

Federal funding has been critical to the development and deployment of telehealth technologies and networks across the nation. The University of Virginia Telemedicine network has benefitted greatly from USDA funding through the Rural Utilities Service Distance Learning and Telemedicine (DLT) Grant Program and through the USDA Community Facilities Program. We have expanded services to more than a dozen healthcare facilities with USDA grants and recently have launched a major rural cancer outreach initiative with a 2007 grant from the USDA DLT program.

Since the inception of the program in 1993, hundreds of RUS grants have been awarded to telemedicine projects similar to our own. This funding has been critical to the development of rural telemedicine networks nationwide. The USDA Rural Broadband Grant

and Loan Program has supported the deployment of communications infrastructure which underpins successful telemedicine, E-health applications and health information exchange.

We have also received critical funding from other federal agencies including the Health Resources Services Administration (HRSA), the Department of Commerce, the Federal Communications Commission (FCC), the Dept of Housing and Urban Development, and the Appalachian Regional Commission.

We applaud the Rural Utilities Service for its process of identification of rurality re eligibility for the DLT program. These USDA definitions are simple and practical and are very much aligned with community gaps in specialty health professional services. Ironically, these definitions include communities otherwise deemed ineligible for other federal telehealth-related services – such as reimbursement under Medicare or communications discounts in the FCC Rural Healthcare Support Mechanism of the Universal Service Fund. These issues will be addressed below but raise the concern that the long-term sustainability of telemedicine projects established through this program and other federal telehealth programs may be at risk.

We urge Congress to support greater levels of funding for USDA and other federal programs that expand telehealth initiatives, and to facilitate policies that more broadly integrate telehealth into mainstream healthcare.

D. The role of Congress in fostering greater deployment of telehealth technologies:

The telehealth community is indebted to Congress for its commitment to foster an environment that enhances access to healthcare for all Americans, regardless of rural or urban location.

Notwithstanding an initial climate of non-reimbursement from third party payers, high telecommunications costs, limited deployment of broadband services in many rural communities, high equipment costs, restrictive state licensure regulations and a general skepticism of the ability to provide quality care via such technologies, we and other telehealth providers have persevered in our efforts to offer our rural patients access to the same quality healthcare and educational services enjoyed by our urban citizens.

Such programs have only been realized with the help of the Congress for the funding of telemedicine demonstration projects in all 50 states, in fostering a climate of competition in the telecommunications sector, in mandating reimbursement through the Medicare programs and as feasible, by encouraging states to do the same through their Medicaid programs.

Despite a favorable revision of Medicare telehealth rules brought about by the Medicare Benefits Improvement and Protection Act of 2000 (BIPA), many critical telehealth facilitated services are still considered ineligible for Medicare reimbursement based on the location and the type of consult origination site. Indeed, Medicare expenditures for telehealth in the six years that followed BIPA were reported by the Center for Medicare and Medicaid Services (CMS) as less than \$5 million.

We applaud Congress for the passage of the very recent Medicare legislation that expands the eligible consult origination sites. Still there are many appropriate and worthy clinical sites from which telehealth consultative services are not reimbursed, such as non-hospital based dialysis facilities. Medicare will only reimburse telehealth services that originate in rural locations, based on a definition of rural far less inclusive than that of the USDA or even the FCC. Consults cannot be reimbursed by Medicare if that originating site is

not located in a designated health professional shortage area, or a federally designated county wide metropolitan statistical area (MSA).

Store and forward services are ineligible for Medicare reimbursement other than services provided in Alaska and Hawaii. Home telehealth technologies provide well documented improvements in health status, and should be reimbursable as a part of a comprehensive care program designed to reduce improve clinical outcomes and lower healthcare costs. Practitioners eligible for Medicare for in-person services delivered in the home should be reimbursed for similar services provided using telehealth technologies.

We strongly commend Congress for the passage of the Telecommunications Act of 1996, and its effect in bringing about a reduction in the cost of communications services and an increase in the deployment of broadband connectivity to our rural communities. In 1995, the monthly ongoing cost of a T1 connection from Charlottesville to Wise, Virginia was \$5800 per month. In 2008, with Universal Service Fund discounts, that same service now costs \$200/month. And yet, the Rural Healthcare Support Mechanism, as mandated in the Telecommunications Act, still remains significantly underutilized, in part because statutory barriers prevent the program from achieving the goals envisioned by Congress. Many communities designated as rural by USDA standards do not qualify for Universal Service Fund support by virtue of uncoordinated agency definitions of rurality.

The time limited Rural Healthcare Pilot Program, launched in November 2007, holds promise to expand the deployment of broadband services for purposes of telemedicine and e-health, however, this program is also fraught with limitations that pose barriers to its success. As an example, neither administrative costs of managing the project nor programmatic evaluation are eligible for support in the Rural Healthcare Pilot Program.

Any effort to coordinate and facilitate greater utilization and cost-effective deployment of telemedicine initiatives will ultimately enhance the sustainability of rural telemedicine programs and by inference, the health of our rural citizens. Without coordination across all the agencies, we are at risk of engendering obsolescence in the federal government's considerable investment in telemedicine programs.

Conclusion:

In conclusion, by

- a. Increasing federal funding for quality demonstration projects and grant programs,**
- b. Further reducing both statutory and regulatory barriers to telehealth in Medicare,**
- c. Aligning federal agency definitions of rural with *specialty* healthcare shortages, and in particular, using as a model, the definitions of rural applied by the USDA Distance Learning and Telemedicine Grant Program,**
- d. Encouraging the use of (and reimbursement for) store and forward telemedicine, and home telehealth, and**
- e. Further improving the Rural Healthcare Support Mechanism,**

Congress has an opportunity by to improve access to locally unavailable quality healthcare services that reduce rural - urban disparities and improve the health of all Americans.

Thank you for this opportunity to offer testimony before the Committee today. I would be happy to respond to any questions.