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Chairman Wicker, Ranking Member Schatz, members of the Subcommittee on Communications, Technology, Innovation and the Internet, thank you for the opportunity to provide testimony regarding the Federal Communications Commission's (FCC) Universal Service Fund and in particular, the Rural Healthcare Support Mechanism established by the Telecommunications Act of 1996 (the Act).

I am the co-founder and Director of the Center for Telehealth at the University of Virginia (UVA), past President of the American Telemedicine Association, and current Board Chair of the Virginia Telehealth Network. UVA is also the home of the

Department of Health and Human Services' Health Resources and Services Administration (HRSA) funded Mid Atlantic Telehealth Resource Center, through which we provide technical assistance to providers and systems across 9 states including the District of Columbia. It is from these related perspectives that I offer testimony regarding the critically important role of the Universal Service Fund in advancing access to high quality care to rural Americans through telehealth related programs and services. Although the focus of this hearing relates to the Rural Healthcare Support Mechanism, I will also touch upon the multifactorial issues that continue to impact the adoption of telehealth nationwide.

As Committee members know well, telemedicine is not a new specialty, a new procedure or a new clinical service…simply defined, it is the use of technology designed to enable the provision of healthcare services at a distance. 21st century telemedicine services can be provided live, via high-definition interactive videoconferencing supported by high resolution peripheral devices; asynchronously, using store and forward technologies, or through the use of remote patient monitoring tools. Telemedicine has been demonstrated to effectively mitigate the significant challenges of workforce shortages, geographic disparities in access to care, while improving patient triage and timely access to care by the right provider at the right time. Telemedicine tools foster patient engagement and self-management where appropriate.

Rural healthcare:

Where local specialty care services are not available, particularly in rural and underserved regions and health professional shortage areas, telemedicine offers timely access to care and spares patients the burden of long distance travel for access to that

care. Telemedicine supports an integrated systems approach focused on disease prevention, enhanced wellness, chronic disease management, decision support, and improved efficiency, quality and patient safety.[1]

Although rural communities face the same basic challenges in access, quality and cost as their urban counterparts, they do so at far greater rates, attributable to a host of factors. "Core health care services" such as primary care, emergency medical services, long term care, mental health and substance abuse services, oral health and other services are considerably less accessible in rural communities.[2] Lack of access to specialty care services is an even greater challenge. Rural communities lack sufficient patient volumes to support specialty and subspecialty practices and primary care providers are often overwhelmed with complex patients with acute and chronic illness. Telehealth technologies offer ready access to such services when rural communities and providers partner with tertiary and quaternary care facilities and where appropriate, with one another.[3]

Attracting health professionals to rural communities remains a daunting task and retaining those health professionals to practice in rural communities is equally difficult. Strategies to recruit and retain clinicians to practice in rural and frontier communities must also include innovative applications that enhance the management of patients with acute and chronic illness, and reduce the chronic sense of isolation experienced by those

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[1] Agency for Healthcare Research and Quality. Effective health care programs. https://effectivehealthcare.ahrq.gov/ehc/products/624/2254/telehealth-report-160630.pdf. Rockville, MD 2016

[2] Institute of Medicine, Committee on the Future of Rural Health Care. "Quality through collaboration: The future of rural health care." (2004).

[3] Lustig, Tracy A. Institute of Medicine, The role of telehealth in an evolving health care environment: workshop summary. National Academies Press, 2012.

practitioners by affording enhanced connectivity to colleagues and educational opportunities.

Telehealth technologies should be viewed as integral to rural development. In our program, more than 90% of patients seen via telehealth remain within their community healthcare environment, resulting in reduced burdens for patients and their families. These benefits include a reduction in unnecessary transfers, and related transportation and housing expenses for patients and family members. In addition, a reduction in hospital lost revenue (as might occur with patient transfers) can lead to enhanced economic viability of the rural community hospital. A viable community healthcare environment supports jobs, provides incentives for the relocation of industry, and enhances community economic development.

The aging of our population has already created increased demand for specialty healthcare services to address both acute and chronic disease in the elderly. These challenges are exacerbated in rural communities. As an example, rural patients experience 25% higher death rates from ischemic heart disease than do their urban counterparts.[4]

The FCC's Connect2Health Taskforce has created a searchable database to overlay health status indicators with broadband availability. Not surprisingly, according to the Taskforce, close to half of U.S. counties are "double burden" counties – that is, areas with high levels of chronic disease and need for more broadband. More than 36 million Americans live in these double burden counties, according to the FCC report, where the fixed broadband access rate is 55 percent. The FCC also found that in these

[4] Texas A&M University, Rural & Community Health Institute (2017) What's next? Practical suggestions for rural communities facing a hospital closure.

counties, as an example, the prevalence of obesity is 19 percent above the national average, while the prevalence of diabetes is 25 percent above the national average. A lack of Internet access is also connected with challenges in seeing health professional. "Most of the counties with the worst access to primary care physicians are also the least connected," according to the FCC report.[5] The 2010 National Broadband Plan sets achievable targets for healthcare connectivity.[6]

Although the challenges of unfavorable geography and distance tend to be uniquely rural, socioeconomic issues, health disparities, and other serious barriers to access to quality healthcare are also, of course, compelling in urban areas. Poverty, unhealthy behaviors and adverse health status indicators are also highly prevalent in our urban communities. Wait times for access to specialty care services adversely impact our urban insured beneficiaries as much as they impact our rural insured. Isolated vulnerable urban patients suffer from high rates of chronic illness. A bus ride across town with a long wait in an emergency room can be as challenging for an isolated, vulnerable uninsured urban patient as is a long ride for a rural patient. Telehealth tools can help to mitigate health disparities and improve outcomes in urban populations as well.

The University of Virginia Center for Telehealth

The University of Virginia Health System is a 610 bed state-supported academic medical center, and one of the two safety-net hospitals in the Commonwealth. The Health System is comprised of the UVA Medical Center, the UVA School of Medicine,

[5] https://www.fcc.gov/health/maps

[6] Thomes, Cynthia. "The National Broadband Plan: Connecting America. Administered by the Federal Communications Commission, 445 12th Street SW, Washington, DC 20554. Retrieved October 15, 2010, from http://www. broadband. gov." (2011): 435-436.

the UVA School of Nursing, and University Physicians Group, our practice plan. Our UVA telemedicine program was formally established in 1996, as an effort to improve access to high quality care for all Virginians, regardless of geographic location. Recognizing the limited availability of broadband connectivity in rural regions of our state, we were early advocates for the Rural Healthcare Support Mechanism prior to the passage of the Telecommunications Act of 1996, and have since worked with the Federal Communications Commission by participating in Commission hearings, hosting members of the Commission at UVA and in the form of comments to multiple FCC proceedings. My UVA Center for Telehealth faculty colleague Colonel Eugene Sullivan served on the initial FCC Healthcare Advisory Board and Katharine Wibberly, PhD, Director of Research at our Center currently serves on the Universal Service Administrative Company (USAC) board representing rural healthcare.

Since the establishment of our telemedicine program, we have developed collaborations that connect the UVA Health System with 153 sites across the Commonwealth using high definition video-teleconferencing, store and forward technologies, remote patient monitoring and mobile health tools to improve access to healthcare services for the citizens of the Commonwealth. We connect with hospitals, clinics, federally qualified health centers, free clinics, community service boards, health departments, medical practices, dialysis facilities, correctional facilities, PACE programs, rural schools, and skilled nursing facilities. Our telemedicine program has reduced the burden of travel for Virginians by more than 17 million miles, saved lives and fostered innovative models of care delivery and workforce development. We have launched a care coordination and remote patient monitoring program for patients at home that has

significantly reduced hospital readmissions by more than 40% regardless of payer. UVA telemedicine spans more than 60 different clinical subspecialties, spanning the continuum from prenatal services, to emergency and acute care consultations and follow up visits, to chronic disease management and palliative care. We have facilitated more than 65,000 live interactive patient consultations and follow up visits using high definition video-teleconferencing, monitored more than 3000 patients at home with remote monitoring tools, screened more than 2500 patients with diabetes for retinopathy, the number one cause of blindness in working adults, used our connectivity to support more than 100,000 teleradiology services and through our electronic medical record, EPIC, facilitated more than 2500 e-consults between providers. These programs and partnerships are dependent on reliable broadband communications services and in the majority of cases, we rely on the FCC Rural Healthcare Program for connectivity between facilities. **Absent the Rural Healthcare program, our ability to provide these services would be severely constrained.**

As an example, not long after we launched our telemedicine program in 1996, we received a grant from the US Department of Commerce NTIA TIIAP program. Prior to the passage of the Telecommunications Act, the cost of a 1.54 megabit connection to a small rural community hospital in Appalachian Virginia was unaffordable, priced nearly $6000 per month. After passage of the Act, with enhanced competition and through the Telecommunications program of the Rural Healthcare Program, we secured discounts that allowed us to deploy telehealth services to that same hospital with greater bandwidth for a fraction of that original cost. Lives have been saved. That community hospital participates in our acute telestroke program, facilitated by the rapid transmission of

radiographic images and CT scans and high definition videoconferencing that informs the mutual clinical decision making processes. By benchmarking against urban sites, we have secured subsidies as high as 89% for some eligible rural partners through the Telecommunications program. Since the inception of the Rural Healthcare Program in 1988 to 2016, the Commonwealth of Virginia has drawn down support of $23,588,000 in USAC funding for healthcare programs.[7]

Affordable broadband connectivity is without question, the requisite underpinning of our telemedicine program, and as such, these efforts have changed the standard of care in rural Virginia. However, in light of the complexity of the program applications, we established a process by which we applied on behalf of our telemedicine partners across the state. Few small hospitals or federally qualified health centers could easily navigate the complex process inherent in the Program.

In 2002, in response to a notice of proposed rulemaking, and in the face of low utilization of the Telecommunications Program nationwide, we proposed that the Commission consider inclusion of rural for-profit hospitals with an emergency room as eligible for subsidies. Our justification was that many of those rural hospitals were financially strapped not-for-profit hospitals later acquired by for-profit entities, the only healthcare facility in the rural community, were bound by EMTALA (Emergency Treatment and Labor Act) and as such, inclusion of those facilities in the Rural Healthcare program was consistent with the public health and public safety provisions of the Act, which identified the relationship between universal service and public safety was clearly addressed. "The Joint Board in recommending, and the Commission in establishing, the definition of the services that are supported by Federal universal service

[7] Universal Service Administrative Company 2016 Annual Report

support mechanisms shall consider the extent to which such telecommunications services (A) are essential to education, public health, or public safety…[and}
(D) are consistent with the public interest, convenience and necessity". [8]

The Commission agreed, and in its subsequent rulemaking, included as eligible entities for-profit rural hospitals with emergency departments. Using a similar argument, we also suggested the Commission consider funding emergency medical services providers (EMS) however, the Commission demurred.

In 2007, UVA was awarded a FCC Pilot Program to expand our telehealth and telestroke network across the Commonwealth. The pilot program provided broadband discounts of 85%, and for the first time, permitted inclusion of a limited number of urban entities. Our Pilot program ends with Funding Year 2016, on June 30, 2017 and we will apply as a consortium to continue through the Healthcare Connect Fund.

The Healthcare Connect Fund (HCF), a modernized Rural Healthcare Program was established in 2013 to allow for consortium applications, for funding up to three years which reduces the cumbersome annual reapplication process. The Commission recently added skilled nursing facilities as eligible entities both for both the Telecommunications and the HCF fund. The HCF provides 65% support and limited urban support within consortia.

USAC has accelerated its outreach efforts and by streamlining the application process (amongst other changes consistent with program modernization), utilization has greatly increased, such that in Funding Year 2016, remarkably, the $400 million funding cap was exceeded. Hence, to ensure equitable use of the program, the Commission has reduced support in Funding Year 16 by 7.5%. This has created hardships for states such

[8] 47 U.S.C. Section 254 (C) 1 A,D

as Alaska that currently draw down more than $100 million to support their extraordinary needs to expand telehealth programs within rural and frontier regions of the state. We fully support an expansion of the $400 million cap established by the Commission for the Rural Healthcare Program in 1998. If that is not feasible, we would suggest consideration of additional federal options for infrastructure build out.

Sustainability of telehealth

It is important to note that the success of any telehealth program relates to factors that include but also extend beyond the cost of broadband connectivity. Elements that contribute to the success of program operations and sustainability include payment by private and government payers, tracking of clinical and process quality metrics, workforce capacity, and careful analysis of outcomes. All play a role in institutional commitments to sustaining a telehealth program. Return on investment must be considered in the context of organizational mission and programmatic alignment with that mission.

The UVA Center for Telehealth tracks a broad range of process and quality metrics to include such metrics as time from consult request to completion of encounter, data transport metrics (as they relate to the transfer of medical images and quality of service of the connection), *clinical outcomes measures,* miles of travel avoided, patient satisfaction, provider satisfaction and other organizational metrics.

Examples of clinical outcomes include the following:

a) Our stroke telemedicine program has supported the evaluation and treatment of more than 1000 rural Virginians, resulting in TPA (Tissue Plasminogen Activator) administration rates now exceeding >20% in rural partner hospitals. These TPA

administration rates align with the rates of TPA administration for stroke patients treated in our own emergency department. This compares favorably to statewide TPA administration rates of <1% prior to the initiation of our stroke telemedicine program and others within the Commonwealth. In addition, we have more recently accelerated time to treatment by connecting EMS providers to our stroke team further accelerating time to treatment when "time is brain". The human toll and cost to society (and the payers) of a lack of access to such therapies is enormous.

b) Our high-risk obstetrics telemedicine program serves rural high risk pregnant women. We, like others, have documented a reduction in NICU hospital days for the infants born to these patients by 39% compared to control patients, reduced patient no-shows by 62% and reduced patient travel by these pregnant women by 200,000 miles.

c) With our partner, UVA Remote Care Solutions,, using care coordination and remote patient monitoring tools, we launched a program to prevent hospital readmissions for patients with heart failure, acute myocardial infarction, chronic obstructive pulmonary disease, pneumonia, stroke and joint replacement, and have reduced all cause 30 day readmissions by > 40%.

d) Store and forward ophthalmologic screening for retinopathy, the number one cause of blindness in working adults has been provided to underserved adults with diabetes. Over the past two years, more than 2500 ophthalmologic screens have been performed, with 46% of patients identified as having abnormal studies, requiring follow up or sight saving intervention.

e) Our telepsychiatry program represents the number one request for services. We offer child and adolescent, adult, emergency and substance use services. These programs have been shown to be effective, with high rates of patient satisfaction and rely upon high definition videoconferencing technologies supported by reliable bandwidth.

Issues for consideration:

There remain significant barriers to the broader integration of telemedicine services into everyday healthcare that impact provider utilization. More than 16 different federal agencies report engagement in telehealth, be it through research and other grant funded opportunities, through the establishment of broadband communications networks, clinical service delivery, and even device development and regulation. In the face of a multi-billion dollar federal investment in telemedicine and broadband expansion in support of access to healthcare, those good faith efforts have also been stifled by 20th century federal and state barriers to widespread adoption and a lack of alignment across the programs.

Reimbursement

Medicare: Payment coverage restrictions remain a major impediment to the broader adoption of telehealth by providers. Congress, in 1997, through the Balanced Budget Amendment, and later in 2000, though the Benefits Improvement and Protection Act, authorized the Center for Medicare and Medicaid Services (CMS) to reimburse for telemedicine services provided to rural Medicare beneficiaries across a broad range of CPT codes and services. However, those Medicare telehealth provisions, as established in the Section 1834 (m) of the Social Security Act limit eligible patient originating sites to rural, and have not evolved to take advantage of subsequent analyses of best practices,

outcomes data, and new paradigms of healthcare delivery, even following enactment of the Affordable Care Act. The Medicare definition of rural for purposes of telehealth coverage remains as non-Metropolitan statistical areas and Health Professional Shortage Areas which are aligned with primary care shortages but not adequately for specialty workforce shortages.

Medicare reimbursement of telehealth services remains woefully limited. The Center for Telehealth and e-Health Law (CTeL) reported that in 2015, Medicare allowed $15,664,543 in distant site reimbursement and $1,937,453 in originating site charges NATIONWIDE. Medicare payment data in the fee for service program are shown below, courtesy of CTeL.

Medicare Telehealth Allowed Services and Allowed Charges				
	Distant Site		Originating Site	
Year	Allowed Service	Allowed Charges	Allowed Service	Allowed Charges
2001	1,494	$55,422	294	$5,880
2002	5,285	$185,086	1,596	$31,836
2003	6,776	$404,764	4,389	$90,186
2004	11,266	$765,179	7,841	$161,880
2005	15,970	$1,176,329	10,972	$227,349
2006	25,461	$2,124,881	15,908	$333,138
2007	25,395	$1,991,753	14,336	$310,296
2008	23,144	$1,613,408	9,247	$208,964
2009	37,503	$2,797,893	17,100	$393,291
2010	46,655	$3,397,285	23,660	$550,171
2011	82,701	$5,938,090	32,450	$761,230
2012	106,023	$7,467,157	38,540	$903,233
2013	136,429	$10,689,862	46,147	$1,112,446
2014	155,387	$12,482,270	58,959	$1,452,160
2015	192,692	$15,664,543	79,185	$1,937,453

The Center for Medicare and Medicaid Innovation has funded pilot programs that incorporate broader telehealth reimbursement; although some Accountable Care Organizations remain limited to the rural originating site restrictions.

The Connect for Health Act (S 1016/HR 2556), the Chronic Care Bill (S 870) and the FAST Act (S 431/HR 1148) along with other bills include provisions to expand the use of telehealth and remote patient monitoring in Medicare by reducing originating site restrictions.

The American Medical Association Digital Medicine Payment Advisory Group is currently working to align telehealth taxonomies with use cases, and make recommendations to the CPT Advisory Panel and the RVUs Update Committee (RUC).

Medicaid: Currently nearly every state Medicaid program provides some form of reimbursement for the delivery of telehealth facilitated care to Medicaid beneficiaries. Medicaid innovations adopted by many states in addition to video-based telemedicine consults and follow up visits include coverage for remote monitoring, home telehealth, store forward services.

Private pay: Thirty three states plus the District of Columbia require that private insurance cover telehealth services. Many of the ERISA plans have chosen to cover telehealth services.

Other Federal payers: The Office of Personnel Management offers some telemedicine benefits for individuals covered under the Federal Employee Health Benefit Plans. The Veterans Health Administration has long integrated telehealth solutions as has the Department of Defense.

Standards and practice guidelines

Telemedicine does not create a new field of healthcare, but rather allows duly credentialed clinicians to provide care at a distance using technology. That being said, the American Telemedicine Association and its >9000 member supported Special Interest Groups, Committees and Discussion groups have developed standards and practice guidelines to address technical applications, and clinical practice guidelines, endorsed by specialty societies. Many of these standards and practice guidelines extend beyond the practice guidelines that currently exist for traditional healthcare.

Acceptance of advanced technologies

Patient acceptance of the use of telehealth technologies for consultation and ongoing acute and chronic care has been remarkably positive, attributable in part to the obvious benefit of timely access to locally unavailable specialty healthcare that spares patients the burden and expense of travel to remote tertiary and quaternary healthcare facilities. Indeed, we have collected data that demonstrates that for pediatric tele-psychiatry services, the telehealth "no-show" rate is considerably lower than the in person clinic "no show" rate. Provider acceptance of advanced technologies and telehealth tools has been equally gratifying for patient consultation, patient education, distance learning opportunities, for acquisition of timely information services and for clinical decision support. High bandwidth and high quality connections remain the underpinnings of successful telehealth encounters.

Recommendations:

1. Continue the Rural Healthcare Programs and expand the $400 million funding cap established by the Commission in 1998. There is no statutory requirement that the fund be capped at that level.

2. If the $400 million funding cap cannot be increased, explore additional federal options to support costly infrastructure build-outs for rural healthcare providers.
3. Additionally, if the funding cap cannot be raised, prioritize rural providers in the Rural Healthcare programs.
4. Further simplify the administrative and application processes for rural healthcare providers
5. Expand eligible providers for the Rural Healthcare program to include emergency medical service providers and community paramedics, consistent with the public health and public safety provisions of the Act.
6. Coordinate with the effort being undertaken by the NTIA Department of Commerce with FirstNet to create a nationwide public safety wireless broadband network for Emergency responders.
7. Include wireless technologies as eligible under the Rural Healthcare Programs.
8. Further eliminate barriers to telehealth payment in the Medicare program such as geographic and other originating site restrictions so as to allow the nearly 80% of Medicare beneficiaries currently not covered for telehealth services to avail themselves of the benefits of telehealth mediated care.
9. Allow for Medicare coverage of home telehealth and remote patient monitoring services, in particular, for patients with chronic illnesses. Allow as eligible providers for telehealth services otherwise eligible Medicare providers such as physical, occupational and speech and language therapists.
10. Improve coordination amongst the federal agencies such that our national interests in population health, improved health outcomes, emergency preparedness,

workforce, and health information exchange, enhanced by connected health tools and strategies.

In summary, telehealth affords patients enhanced access, lowers the overall cost of care, and improves efficiency, quality, clinical outcomes and population health. The Rural Healthcare Program is a critical underpinning of a modernized healthcare delivery system in the digital era and as such must be continued, expanded and further modernized to fulfill the promise of healthcare in the digital era.