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Before the

House Committee on Energy and Commerce

On Examining Bipartisan Legislation to Improve the Medicare Program

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Chairman Burgess, Ranking Member Green, and other Members of the Committee, thank you for the opportunity to testify on behalf of the American Academy of Neurology at today's hearing about the FAST Act of 2017 ("Furthering Access to Stroke Telemedicine Act of 2017"; H.R. 1148).

There have been great advances in acute stroke treatment in the past two decades. We have gained the "clot-busting" drug Alteplase (tPA or tissue plasminogen activator) and also catheter-based clot-removal devices—both of which can reverse an acute stroke within the first few hours. We also have learned that time to treatment is one of the most important predictors of ultimate post-stroke outcome. Telemedicine ("telestroke") is a tool that significantly improves the speed and quality of evaluating the acute stroke patient. This legislation, if enacted, would allow Medicare beneficiaries with acute stroke to receive the most efficient and effective care, which will save lives and reduce the number of those who survive with costly post-stroke disability. The American Academy of Neurology is pleased to offer our support for this legislation.

Stroke is a major public health problem that takes an enormous toll on families and on our nation. It is our nation's No. 5 cause of death and a leading cause of serious, long-term disability.¹ Stroke is a disease that is more common in the elderly, and despite some success in reducing the incidence of stroke, the absolute number of strokes is increasing as our US population ages. A report by the American Heart Association has projected that the number of people living with stroke will increase from 7.5 million Americans in 2015, to 11.2 million in 2035, a 50 percent increase over the next 20 years. This report also estimates that the medical costs of stroke in the U.S. will more than double, from \$37 billion in 2015, to \$94 billion in 2035.² There are substantial costs required for the acute hospital care of stroke, but the majority of cost derives from years of post-stroke care when a survivor is disabled. MedPAC has reported that stroke is the leading Medicare diagnosis for inpatient rehabilitation stays,³ and is a leading diagnosis requiring nursing home care. Unfortunately, stroke is also becoming increasingly

more common in the young.⁴ Strokes in younger people are less likely fatal, and thus lead to more potential years of disability and productive work life lost, with substantial lifetime cost to our health system. One way to reduce post-stroke disability across the lifespan is improve access to telestroke care, which in turn will improve post-stroke outcomes.

Time Is Brain

In the treatment of stroke, we often say that “time is brain.” The majority of strokes (90%) are ischemic strokes, arising when a blood vessel to the brain is blocked by a blood clot. With every minute that a stroke goes untreated, brain cells and connections between them are irreversibly injured. The brain tissue is “suffocating” from a lack of blood flow with oxygen, and once the cells are dead they cannot grow back. As described above, we now have proven treatments available to remove the blood clots and restore blood flow to the affected areas including tPA and catheter-based clot-removal devices. When patients are appropriately selected, these treatments are highly effective. To maximize benefit to patients, the treatments must be administered as quickly as possible after the onset of stroke symptoms start. Similar to lessons learned in treating acute heart attacks, every minute counts. Research has shown that stroke patients who get treated with tPA within 60 minutes of hospital arrival do significantly better than those treated more slowly. It has been shown that for every 15 minute reduction in treatment time, 5.1 percent more patients recover well enough that they can return directly home from the hospital.⁵ Ischemic stroke patients who are treated with the clot-busting drug within 90 minutes of symptoms starting are nearly three times more likely to recover with little or no disability.⁶ Similarly, more than 90 percent of patients treated with a clot retrieval device within 150 minutes of stroke onset recover with little or no disability.⁷

To receive one of the proven acute stroke treatments, patients must arrive at the hospital within the first few hours after stroke onset. Ideally, they would present to a hospital certified as a stroke center but many patients live too far from such a center to arrive within the time window. Ideally the acute stroke patient would also be seen by a stroke expert such as a vascular neurologist, but there is a shortage of these experts relative to the number of strokes. As such, it is unfortunate that very few stroke patients receive acute treatment. Research originating from the University of Cincinnati has shown that only about 3.4 to 5.2 percent of patients receive the clot-busting medication.⁸ Among Medicare-eligible patient discharges, the national average tPA treatment rate is only 2.4 percent.⁹ Even fewer patients are treated with clot retriever devices; only 1 in 5 stroke patients are managed and discharged from hospitals that neither give tPA nor perform thrombectomy.¹⁰ Telestroke remedies several of the problems

listed above, in that the expertise of stroke experts at stroke centers can “go to the patient” and thus increase the percentage of stroke patients who receive acute stroke treatment and also reduce the time it takes to get the treatment started.

Telestroke: A New Standard of Care

The first step in acute stroke care is rapid and accurate diagnosis, because a variety of conditions can mimic acute ischemic stroke and 10% of stroke patients have hemorrhagic stroke and for these patients tPA is dangerous. For hospitals that do not have vascular neurologists available, the only option historically (prior to telestroke) was telephone-based triage.

In Cincinnati, our University of Cincinnati-based stroke team has provided acute stroke care to all hospitals in the region since the late 1980's. This is a unique situation that is not found in most US cities. We accomplished this prior to telemedicine by telephone-based triage, and then physically driving to each hospital in the metropolitan area where we believed there was a potential acute stroke patient who could be treated. This system did allow stroke expertise to all patients in the metropolitan area but was inefficient, as valuable time was wasted with telephone communication and then driving. Often we would drive a substantial distance only to find that the patient had a stroke mimic and was not eligible. For outlying hospitals (outside the main metropolitan area), we could only do telephone triage and had to make treatment decisions based upon limited information.

Telemedicine provides a means to immediately assess a patient and most rapidly implement appropriate treatment to patients that need it. We began telestroke for outlying hospitals several years ago because we felt it necessary to have the ability to visually assess the patient in order to make medically appropriate decisions. As more and more data have emerged about how even short delays can lessen the chance of good outcome, we felt it necessary to begin telestroke even for urban and suburban hospitals within the last two years. Rather than spending valuable minutes on the phone and then as much as 40 minutes driving (the distance from my house to the most distant hospital in the region is 35 miles), we can see the patient via telestroke within seconds and make a fully informed decision within minutes.

Multiple studies have shown that telemedicine has improved the percentage of patients who receive recommended acute stroke treatment. One study of four urban hospitals in Illinois with low tPA treatment rates found that their utilization of tPA increased by two to six times after telestroke was implemented.¹¹ In our regional network of 27 hospitals, we have seen a substantial increase in the number of acute stroke patients treated—almost a four-fold increase

from 2006 to 2016. While there are other reasons for the increase, such as an expanded time window and new technologies, there is no doubt expanded telestroke presence has played an important role in increasing regional access to acute stroke treatment.

Importantly, the outcomes for stroke patients cared for in hospitals with telemedicine support are comparable to those achieved in other stroke centers and have surpassed those achieved by general hospitals without telemedicine support or stroke units.¹² In our Cincinnati network, our average door-to-needle time in 2016 was 55 minutes across the entire network. By comparison, the national goal is 60 minutes, and at the University of Cincinnati Medical Center (which is a Joint Commission Certified Comprehensive Stroke Center) our door-to-needle time was 45 minutes. These data represent a substantial improvement over prior years, and demonstrate that telestroke allows the highest quality care to be practiced remotely.

Despite these proven benefits of telestroke, Medicare's coverage for it is woefully outdated. The current Medicare policy of limiting coverage for telehealth services to those patients originating in only rural areas has hampered the development of widespread telestroke coverage. Approximately 94 percent of strokes occur in urban or suburban settings. It has been estimated from 2014 data that approximately 522,000 Medicare beneficiaries 65 and older who have a new stroke would be eligible for a telestroke consultation. This estimate includes individuals in rural areas that do not meet the current and fairly narrow definition of "rural" for Medicare payment of telestroke services.

Finally, as new treatments become available, an increasing number of patients might be eligible for stroke care. In our Cincinnati region, the number of calls to the stroke team has risen exponentially such that we fielded 4341 calls in 2016. In our old model, driving to even a small proportion of those cases thought to be eligible would be overwhelming. Telemedicine allows efficient deployment of our efforts to those we are sure will qualify for treatment, and thus provides greater overall coverage of our entire region.

Therefore, the most significant step Congress could take would be to allow Medicare to reimburse for telestroke evaluations for patients regardless of their location, as the FAST Act would do.

Telestroke Saves Time, Which Improves Outcomes and thus Saves Money

Telestroke not only improves access to acute stroke care, but also will result in healthcare cost savings by reducing chronic disability that requires expensive and ongoing medical care. Several studies have conclusively shown that the use of tPA for acute ischemic stroke is cost-effective. The definitive tPA study published in the *New England Journal of*

Medicine showed that stroke patients receiving tPA were at least 30 percent more likely to have minimal or no disability at three months, compared to patients who did not receive this treatment. These patients also had shorter hospital stays and were more frequently discharged to their homes rather than to more costly nursing homes.¹³ Another study found that the average cost savings when administering tPA was \$4,255 in 1996 dollars per treated patient, largely as a result of decreased utilization of nursing home and rehabilitation care by the patient.¹⁴ The most recent study on this topic found that treatment with tPA resulted in \$25,000 lifetime cost savings per patient.¹⁵ Similar data are available from recent series of catheter-based treatment for large strokes. Finally, a study aimed at evaluating the cost utility of telestroke networks estimated net savings of \$1,436 per patient, even after accounting for the costs of implementing the telestroke network and administering tPA.¹⁶

The American Heart Association has estimated that the FAST Act could save the Medicare and Medicaid programs as much as \$1.2 billion over 10 years, even after the costs of providing more telestroke evaluations and more tPA treatments are factored in. In its analysis of the FAST Act, the Congressional Budget Office did not allocate the full amount of savings to the federal Medicare and Medicaid programs since some of the savings that results from reducing the need for nursing home care accrues to state rather than federal government. Even if this is correct, acute stroke medicine is evolving to optimize access to the best care that produces the best outcomes. Adjusting the reimbursement model to match the new standard of care is surely cost-effective and is the right thing to do for patients.

This change in Medicare law is long overdue. A growing number of lawmakers and organizations have endorsed telestroke care and the FAST Act of 2017. For example, H.R. 1148 currently has 122 bipartisan cosponsors. In addition to the American Academy of Neurology and the American Heart/Stroke Association, organizations such as AARP, the American Hospital Association, the American Medical Association, American Association of Neurological Surgeons and the National Coalition for Health Care have also expressed their support for lifting Medicare's current restrictions on telestroke coverage. Finally, the Medicare Payment Advisory Commission, in its June 2016 report to Congress, found telestroke to be one of the most beneficial and cost-effective applications of telehealth and suggested that policymakers may want to expand Medicare coverage of telestroke to urban settings,¹⁷ as the FAST Act would do.

In conclusion, acute stroke care has progressed tremendously in the last 20 years. Telestroke is supported by a wealth of evidence and is a common-sense, cost-effective step

that the Committee can take to improve post-stroke outcomes. I am convinced that expanding the use of telestroke will greatly increase the utilization of effective acute stroke treatments, reduce stroke-related disability for many Americans, and save the health care system money. As such, I urge the House Committee on Energy and Commerce to act favorably on the FAST Act. Thank you for your attention to stroke, which is a terrible disease that I am passionate about treating. On behalf of the American Academy of Neurology, we greatly appreciate the thought and deliberations that went into the development of this bill and for the opportunity to express our strong support at today's hearing.

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