Obstacles and Solutions in the Implementation of Telestroke
Billing, Licensing, and Legislation

Mark C. Aita, MD; Kim Nguyen; Robert Bacon, MBA; Kevin M. Capuzzi, JD

The American Heart Association in its 2013 Stroke Statistics Update\(^1\) reports the annual direct and indirect costs of stroke in the United States to be $62.7 billion, with 15% to 30% of stroke survivors being permanently disabled and 20% requiring institutional care at 3 months after stroke. Rapid recognition and accurate diagnosis are critical to optimize outcomes in patients with acute stroke. Patients treated within 90 minutes of stroke onset with the thrombolytic tissue-type plasminogen activator (tPA) have increased odds of improvement at 24 hours and favorable 3-month outcomes compared with patients treated later than 90 minutes.\(^2,3\) Timely thrombolytic treatment also substantially lowered the long-term costs of stroke.\(^4\)

In the United States, there are \(\approx\) 4 neurologists per 100,000 people, caring for \(>700,000\) acute strokes per year,\(^5\) although many parts of the United States lack access to acute stroke services entirely.\(^6\) Telemedicine provides a means to increase access to limited specialty expertise and facilitate timely remote neurological assessment, neuroimaging evaluation, and therapeutic decision making for patients with acute stroke.

In its 2009 Scientific Statement, which reviewed evidence for the use of telemedicine within Stroke Systems of Care, the American Heart Association/American Stroke Association recommended that a stroke specialist using high-quality videoconferencing provide a medical opinion in favor of or against the use of tPA in patients with suspected acute ischemic stroke when on-site stroke expertise is not immediately available.\(^7\)

In making this class 1 recommendation, the American Heart Association/American Stroke Association cited studies that showed increased rate of tPA treatment and good functional outcomes at telestroke network hospitals. The TEMPiS project established high-quality videoconferencing services to a network of 12 regional hospitals in Bavaria serviced by 2 stroke centers.\(^8\) It reported a 10-fold relative increase in tPA treatments at telestroke network hospitals compared with the 12-month period before the network was started (from 10 to 115 per year).\(^9\) During the first 22 months of this study, the mortality rates for stroke patients treated with tPA at telestroke network hospitals were similar to mortality rates for stroke patients treated with tPA at the stroke centers: 11.2% versus 11.5% at 3 months (\(P=0.55\)) and 14.2% versus 13% at 6 months (\(P=0.45\)). In addition, good functional outcome after 6 months was found in 39.5% of the telestroke network hospitals versus 30.9% of the stroke centers (\(P=0.10\)).\(^10\)

The STRokE DOC trials compared telestroke and telephonic consultation in the treatment of acute stroke. Although pooled data from the 2 trials to date published suggest there is a higher rate of correct treatment decisions with telestroke, there were no differences in tPA use, intracranial hemorrhage, mortality, or functional status in either group.\(^11\) Despite delays in tPA treatment decisions and the occurrence of technical problems that have been reported to interfere with transmission, the use of telestroke is generally comparable with telephonic consultation.\(^12,13\)

To evaluate the cost-effectiveness of telestroke services, researchers at the University of Utah Stroke Center developed a decision-analytic model that used the cost of treatment with the use of telestroke consultation and the quality of life after treatment for both 90-day and lifetime horizons. The costs and benefits were compared with the costs and quality of life of patients treated in rural emergency rooms without the assistance of a neurologist via telemedicine. The study concluded that telestroke may be cost-effective in the long-term, but during the short-term, it does not seem to be cost-effective because of large upfront fixed equipment costs.\(^14\)

The development of telemedicine programs for the treatment of stroke requires capital investment in infrastructure, which includes computer hardware and related software, audiovisual equipment, and high-speed bandwidth that can support high quality and fast video and data transmission. Telestroke programs often look to government or foundations to help with these significant upfront capital expenses. According to a recent survey published in Stroke,\(^15\) 38 centers across the nation rated lack of funds for infrastructure development, inability to obtain licensure, and lack of reimbursement as the most significant barriers to telestroke program growth. Reimbursement was absent for \(>40\%\) of the sites surveyed.
Billing Compliance and Reimbursement

Telemedicine as addressed in this article relates to the use of electronic communications to include audio and video equipment that permits 2-way real-time evaluation between the provider located at a distant hospital (location of the telemedicine specialist) and a patient located at the originating hospital (hospital where the patient is physically located). These clinical services are rendered simultaneously offering an assessment of a patient such as a clinical plan for treatment. The matters addressed herein are not discussed in the context of nonsimultaneous services such as teleradiology. Specifically, the compliance matters addressed below are related to billing.

Medical necessity for telemedicine services must satisfy the requirements for concurrent care services. Concurrent care exists when >1 provider is required to address the clinical needs of a patient. Typically, this situation arises when the opinion of another provider with specific clinical expertise is required to treat a presenting problem such as rendering a diagnosis or developing a treatment plan. Concurrent care is reimbursed by Medicare when such services are reasonable and necessary for the diagnosis or treatment of illness or injury or to improve functioning of a malformed body member (42 USC § 1395y(a)). Clearly, this is the essence of telemedicine, as patients require clinical opinions from established experts in the field not available at the originating hospital. In fact, the ability to obtain the clinical opinion of the remotely located expert may in many cases alleviate the necessity for a patient care transfer to another acute care facility or provide access to a specialist in an outpatient setting without necessitating a separate appointment in a distant location.

Federal and state rules governing telemedicine present 3 significant billing compliance obstacles that substantially restrict the use of these services for the vast majority of Medicare beneficiaries. These obstacles include statutorily imposed geographical constraints, credentialing, and privileging requirements as stipulated in the conditions of participation and state licensure rules.

As previously stated, the Medicare Benefit Policy Manual restricts reimbursement for telemedicine services, with the exception of demonstration projects to geographical areas designated as rural health professional shortage areas and counties not classified as a metropolitan statistical area. Therefore, only beneficiaries within an originating site designated as health professional shortage areas or non-metropolitan statistical area are eligible for these services. This geographical constraint precludes medically necessary services from being available to a substantial part of the Medicare beneficiary population. Furthermore, telemedicine services cannot be expanded unless this requirement is amended to remove the geographical constraints. Consequently, a patient must be transferred to a tertiary or quaternary care institute to receive these medically necessary services that could have been safely and effectively provided through telemedicine for many of these patients, with corresponding reduction in overall healthcare costs. With these geographic restrictions, current reimbursement of telemedicine services through Medicare is 2.6% less than the original cost estimates of the service.

All hospitals have a legal responsibility to ensure that providers within their entities are competent to provide clinical care to patients. Regulations by the Centers for Medicare & Medicaid Services require that all physicians and practitioners must be credentialed and hold privileges to provide services to patients in the hospital. Specifically, hospitals must evaluate and verify the qualifications of providers to ensure that the caregiver possesses the qualifications necessary to provide medical services to include attributes such as competence, training, and experience. This process is known as credentialing, which serves as a prerequisite to the provider being awarded privileges to see and treat patients within the hospital.

The Final Rule published in May 5, 2011, amended the conditions of participation with respect to the requirements for credentialing and privileging related to telemedicine services (42 CFR §§ 482.12 and 482.22). The regulations established credentialing and privileging by proxy, permitting the originating hospital to rely on the credentialing and privileging process at the distant hospital. However, the revised regulations have stringent requirements that must be met to include written agreements between the 2 hospitals. The agreement must stipulate that it is the responsibility of the distant hospital governing body to meet the requirements related to medical staff credentialing. Furthermore, the medical staff bylaws must be appended to address such matters, accepting the new credentialing procedure and requirements related to physical presence of the caregiver.

Clearly, the revised rules are intended to reduce duplicative and burdensome credentialing when engaging telemedicine services. Many rural hospitals have limited resources to fulfill the requirements necessary to meet the credentialing process. Significant consideration should be given before entering into this process to include the ramifications of allowing another hospital access to confidential information to include patient complaints about adverse events. It is important to note that the regulations allow the originating hospital to rely on the credentialing efforts of the distant hospital but does not require the originating hospital to adopt this process. The originating hospital may continue to provide credentials and privilege for the telemedicine provider within their own facility.

Revised regulations for credentialing do little to provide the intended relief when state licensure regulations are considered. Specifically, most states require a practitioner to be licensed in the state where services are provided to patients. This matter can only be resolved if the states allow exemption for telemedicine services.

In addition to the compliance barriers, current coding methodology does not support telemedicine services. Professional fee reimbursement from Medicare is predicated on what is known as resource-based relative value scale. This methodology was adopted in 1992 for professional fee reimbursement and serves as the touchstone for the reimbursement calculations of many private insurers. Physician work, practice expense, and professional liability relative value units are assigned to most of the procedure codes listed in the Current Procedural Terminology, Fourth Edition (CPT-4). The reimbursement model attempts to recognize the differentiation in operating expenses by geographical area throughout the country using...
an adjustment factor known as the geographic practice cost index. This factor is applied to the respective components of the relative value units to take into the account the regional variation in cost. A conversion factor is then applied to the total relative value units that will determine the amount of reimbursement for the procedure at issue. CPT-4 codes are also known as Healthcare Common Procedure Coding System (HCPCS also known as Hic-Picks) level I codes.

The Medicare program incorporates additional coding requirements known as HCPCS level II codes. Although CPT codes identify procedures or services, HCPCS level II codes typically identify supplies, equipment and devices, and procedures not found in the CPT system. Effective January 1, 2010, Medicare established HCPCS level II codes representing initial and follow-up inpatient telemedicine consultation codes. However, these codes are time based and not recognized by most non-Medicare payers.

Many payers recognize CPT-4 codes approved for telemedicine, such as evaluation and management services (CPT codes 99201 through 99233). However, these codes do not adequately describe the service provided. Furthermore, some of these services require the documentation and performance of a comprehensive physical examination, which is not practical for a provider in a distant hospital.

It is important to note that providers are obligated to document and select the appropriate HCPCS code that best describes the professional service rendered. Clearly, HCPCS level I codes must be developed, which adequately describe the professional services rendered representing telemedicine. New CPT codes are needed to distinguish between consultation services to render a clinical opinion to derive a diagnosis or treatment option versus ongoing comanagement of the patient. For example, most hospitals do not have the ability or resources to permit 24-hour monitoring within an intensive care unit. Telemedicine could serve this critical need by allowing a clinical specialist to monitor a patient in the intensive care units and provide life-saving treatment in real time. A new CPT code would be required to recognize this monitoring activity. However, as previously discussed, such changes will only benefit the general public if the geographical and licensure restrictions are addressed.

**Licensing and Legislation**

Although many states have enacted legislation that would require healthcare insurers to reimburse their providers for telemedicine services, several key legal issues may arise as a result of or in connection with such legislation. Central among these is the threshold issue on physician licensure, which erects a barrier to telemedicine in many states. Specifically, if a state requires telemedicine reimbursement, but has not addressed licensure issues in the context of telemedicine, it is conceivable that an insurer, which reimburses a negligent or improperly licensed physician, may also be liable for any damages occurring to the patient. Thus, it is critical that insurers and physicians alike be cognizant of licensure issues especially in states where reimbursement is mandated or contemplated.

It is a universal requirement that physicians practicing within a state must be licensed in that particular state. But what about physicians who consult or provide healthcare electronically to a patient located in a state in which they are not licensed but remain physically at all times in the state in which they are licensed? Unfortunately, many states have not enacted statutes governing licensure issues in the context of telemedicine, and the states that have are often inconsistent. Thus, there is a genuine lack of uniformity in the law, which may affect physicians practicing telemedicine and, similarly, insurers required by state law to reimburse physicians for such services.

Although not the majority, some states, such as Alaska, Delaware, and Florida, have no general telemedicine provisions in their state statutes. Thus, it is conceivable that doctors practicing telemedicine from or in those states could be subject to discipline. Other states have provisions, but they are essentially meaningless. For example, the Illinois telemedicine provision, codified at 225 ILCS 60/49.5, provides, in part, the following:

1. The General Assembly finds and declares that because of technological advances and changing practice patterns, the practice of medicine is occurring with increasing frequency across state lines and that certain technological advances in the practice of medicine are in the public interest. The General Assembly further finds and declares that the practice of medicine is a privilege and that the license by this state of practitioners outside this state engaging in medical practice within this state and the ability to discipline those practitioners are necessary for the protection of the public health, welfare, and safety.
2. An individual who engages in the practice of telemedicine without a license issued under this Act shall be subject to penalties provided in Section 59.

In short, the Illinois General Assembly recognizes the importance of telemedicine and enacts a statute in furtherance thereof, but then makes no provision regarding the licensure of physicians practicing telemedicine pursuant to that statute. Rather, the statute provides that unlicensed doctors will be subject to discipline. Thus, the only real effect that the statute has on telemedicine is within the state, which is only a minor portion of the overall reach which telemedicine could potentially have if state licensure statutes were expanded. The Illinois statute does not address the situation in which telemedicine crosses state borders, which, for the most part, defeats the concept of telemedicine.

Many states have resolved the issue raised in the Illinois statute by enacting legislation to permit special licensure of physicians practicing telemedicine. For instance, in Louisiana, the legislature requires that the board of medical examiners issue a telemedicine license to allow the practice of medicine across state lines to an applicant who holds a full and unrestricted license to practice medicine in another state (see La. R.S. 37:1276.1). Minnesota has a similar provision, but it requires that the physician holding a telemedicine license reregister annually with the state medical board (see Minn. Stat. § 147.032).

The foregoing special telemedicine licenses are helpful, but they require preregistration and approval of the specific medical board. In an emergency context, such as strokes,
there may not be time for preregistration and approval. Such situations are rarely addressed by statute (that is not to say, however, that case law and other regulations do not provide for emergency exceptions). One state with a progressive telemedicine statute is Tennessee. Not only does Tennessee have a statutory scheme that permits a special telemedicine–type license, but it also provides exceptions when a license is not required (see Tenn. Code. Ann. § 63-6-209 and Tenn. Comp. R. & Reg. R. 0880-2-.16(6)). The exceptions include the following:

1. A physician who practices medicine across state lines in an emergency; or
2. A physician who engages in the practice of medicine across state lines that occurs less than once a month or involves <10 patients on an annual basis or comprises <1% of the physician’s diagnostic or therapeutic practice; or
3. Physicians who engage in the practice of medicine across state lines without compensation or expectation of compensation unless the practice exceeds the limits established by paragraph (6)(b); or
4. The informal practice of medicine in the form of uncompensated consultations, regardless of their frequency; or
5. Licensed/registered physicians or surgeons of other states when called in consultation by a Tennessee licensed/registered physician as provided by T.C.A. §63-6-204 (a)(3).

Pursuant to this regulation, the emergency (subpart a) and the consultation (subpart e) exceptions could conceivably apply in the context of stroke identification and evaluation. Although a physician who regularly practices in Tennessee via telemedicine must be licensed under the special telemedicine license provisions, the Tennessee statute should be used as a model by other states in developing or refining their telemedicine legislation to address emergency or unique consultation situations.

The law regarding licensure of physicians who practice telemedicine is expanding, yet it is still inconsistent from state to state, and, within states, there exist gaps in the law, which create uncertainty. As telemedicine reimbursement grows, telemedicine proponents should also advocate for uniform telemedicine legislation. Such legislation should not permit the unregulated ability of physicians to practice telemedicine without a license, yet emergency and consultation-only exceptions should be incorporated. Similarly, statutes that only govern in-state telemedicine procedures should be expanded because the reach of telemedicine will continue to grow as technology advances. In this regard, a move toward interstate licensing is an ideal way to address the foregoing issues, and states such as Tennessee have shown that it is practical and still subject to enforcement and regulation.

While recognizing that telemedicine provides legitimate services that deserve reimbursement, especially in the context of stroke identification and treatment, if threshold legal issues related to licensure are not addressed with the same expediency, the end result may be more confusion than clarity. That result could have a debilitating effect on what is otherwise a valuable and potentially life-saving practice. A move toward interstate licensing with recognized emergency and consultation exceptions would represent a giant step, together with universal reimbursement regulations, to ensure that telemedicine continues to advance, especially in the context of stroke identification and evaluation.

**Recommendations**

The cost-effectiveness of telestroke is currently compromised by high startup costs and inadequate reimbursement, and legal issues with licensure across state borders are additional barriers to adoption. A summary of specific recommendations that have been discussed in the article is provided.

1. Reimbursement by Medicare should not be constrained to specific geographic locations for all telemedicine services. For patients with acute stroke, whether or not they are located in a rural or urban setting, rapid recognition and accurate diagnosis are critical to optimize clinical outcomes. Telestroke should be considered for full reimbursement in any location where the service is available.
2. A new set of CPT codes would be required to describe telemedicine services adequately and distinguish between consultation services such as telestroke and the ongoing management of a patient as seen in tele-intensive care unit monitoring.
3. There should be a push for uniformity in the law with regard to licensure across state borders and the requirement of insurers to reimburse providers adequately for telestroke services. Interstate licensing, or at least the expansion and consistency of each state’s regulations for physician licensure, would be a crucial step in the advancement of telestroke.

The barriers that providers and insurers face and their hesitation to provide and reimburse for telestroke services can be alleviated by updating healthcare policy and law. Implementation of the recommendations proposed in this article would lead the path to a broader acceptance and adoption of telestroke and thereby improve access of patients with acute stroke to expert neurological consultation and treatment in a timely fashion.

**Disclosures**

None.

**References**


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