Response to Letter Regarding Article, “Art of Expertise in Stroke Telemedicine: Imaging and the Collaterome”

The complimentary comments by Uchino et al1–3 on the recent editorial about stroke telemedicine suggest that the Stroke Emergency Mobile (STEMO) methodology was erroneously described.1–3 They contend that the presence of a neurologist in the ambulance defies the definition of stroke telemedicine despite the use of both teleradiology and further teleneurology consultation with a senior stroke expert to facilitate complex decision making. Their letter describes a further iteration of the mobile stroke unit methods pioneered in Berlin to advance telemedicine and the streamlined triage of patients with stroke in Cleveland. I strongly endorse their efforts to advance the care of patients with both ischemic and hemorrhagic stroke but suggest that their model is not the first nor ultimate refinement of stroke telemedicine.

Stroke telemedicine may be defined and implemented with a variety of technological innovations that continue to evolve, principally leveraging and underscoring the expertise of specific stroke care providers rather than creating artificial definitions and potentially contentious divisions across medical specialties. The Cleveland definition of telemedicine versus teleradiology unnecessarily creates division much like the recent labeling of endovascular therapy trials hailed as the success of stroke surgery. Expert neuroimaging evaluation of the patient with acute stroke is increasingly performed in real time by vascular neurologists, not by teleradiology. Prehospital stroke telemedicine was previously catapulted by the innovative telecommunication paradigm spearheaded by the enrolling Field Administration of Stroke Therapy-Magnesium (FAST-MAG) physicians to evaluate patients with stroke within minutes of symptom onset, from across the globe.4 During the FAST-MAG years, technology advanced from flip phones to smartphones to videophones as internet capabilities accelerated.5 Similarly, mobile computed tomographic (CT) units continue to proliferate in various countries and cities, with multimodal CT angiography and perfusion imaging already reality. Smartwatch innovations and portable devices will undoubtedly modernize prehospital stroke telemedicine through research collaborations that use novel methods for informed consent, compact medical and imaging records, biosensors, and more. Technology such as mobile CT, should be used, but not worshiped. At present, the rapid noncontrast CT in the mobile stroke unit provides marginal information beyond the exclusion of hemorrhage. Only the astute imaging expert may discern the most subtle and potentially influential findings. Stroke telemedicine is therefore best cultivated by care providers that evaluate, treat, and triage all types of patients with stroke rather than solely focusing on a particular subset such as those individuals with large vessel occlusions.

The recent advances of endovascular therapy trials radically alter the landscape of stroke telemedicine, underscoring the essential value of expertise in neurovascular imaging and stroke medicine. The success of recent endovascular trials was predicated on a variety of neuroimaging approaches to identify large vessel occlusion and a favorable collateral profile, defined differently on noncontrast CT, CT angiography, CT perfusion, and analogous magnetic resonance imaging techniques. As such ideal endovascular candidates constitute a minority of all patients with stroke, there will be an overwhelming demand for expertise in clinical and neurovascular imaging skills that will likely depend on telemedicine to efficiently tailor the distribution of all patients with stroke across a particular geographical region. Such demand may paradoxically eclipse the focus on endovascular procedural techniques.

The translation from trials to practice, testing the generalizability of endovascular therapy across the globe, conveniently and appropriately refocuses our attention on predicting outcomes of all patients with stroke rather than just predicting the response of a minority of patients with stroke to a particular technology. Rapid imaging acquisition and expert stroke telemedicine that integrate understanding of the collaterome, as reaffirmed by Uchino et al,1 are the future of acute stroke.

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None.

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