

Paradigm Shift in Stroke Prevention: Need of the Hour

Sir,

I have read with great interest and in depth the review article by Dr. Padma *et al.* – “A call for neurologists to take up stroke intervention.”^[1] I wonder whether it is really a review article or these are more of personal observations of the author and the coauthors. At the onset, we know most of the stroke centers in our country have acute stroke teams. It goes without saying that the head of the team is a stroke neurologist who does a clinical assessment, scoring and then decides the form of treatment depending on the hemodynamics of stroke and also takes into consideration 5Ps of stroke - (Perfusion, Pipes, Parenchyma, Penumbra, and Prevention of complications). Then, he decides if the patient requires any intervention. The interventionist is involved only if any intervention is needed and only if the neurologist decides it is essential. Even though the neurologist is not involved in the actual procedure, but the entire follow-up of the patient is left with the neurologist.

I do not think cardiology interventions should be compared with neurology because both organs have very different hemodynamics. The author mentions that the use of thrombolysis for stroke is very low (a dismal 0.5%), taking into consideration these low figures of thrombolysis, the neurologist needs to spend his time and energy to increase the awareness about thrombolysis to the general population.^[1]

Stroke therapy and care are advancing at a welcome pace. However, despite Food and Drug Administration-approved therapies and national educational efforts, 97% of acute stroke victims are not being offered thrombolysis. In addition, many nonproven and potentially harmful therapies remain in common usage. The lack of standardization in stroke care may be due to the complicated and heterogeneous nature of ischemic stroke. To clarify the approach to acute stroke treatment and hope to assist clinicians in understanding the underlying evidence and pathophysiology of basic stroke care concept of “5Ps” should be understood.^[2]

Intravenous thrombolysis continues to be the most widely accepted standard of care for patients who meet the stringent criteria. Along with restoration, attempts to salvage the brain at risk from ischemia have often focused on increasing collateral flow. Positron emission tomography and single-photon emission computed tomography (CT) imaging of stroke have demonstrated that ischemic brain parenchyma will extract the maximum oxygen; much like a miser hoards maximum available resources.^[2] Most stroke complications can be avoided through the use of standardized stroke pathways, nursing education, and the designation of a stroke unit, the common causes of increased morbidity can be addressed. The stroke unit seems to be an idea whose time has come, much like the development

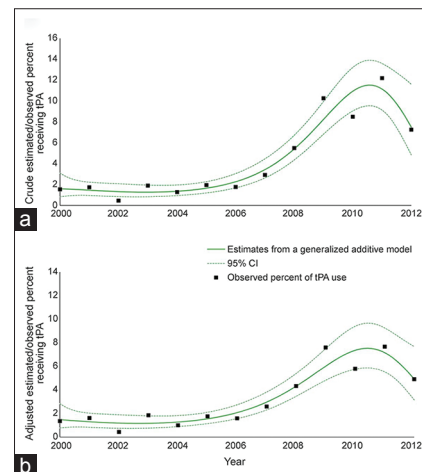


Figure 1: Crude and adjusted proportion receiving tissue plasminogen activator. Estimated and observed proportion receiving tissue plasminogen activator among cases of validated acute ischemic stroke from the Brain Attack Surveillance in Corpus Christi Project between January 1, 2000, and June 30, 2012. (a) Crude estimated/observed proportion of receiving tissue plasminogen activator, (b) adjusted estimated/observed proportion of receiving tissue plasminogen activator. Note that year was modeled as a categorical variable for observed percent in tissue plasminogen activator use. CI = Confidence interval

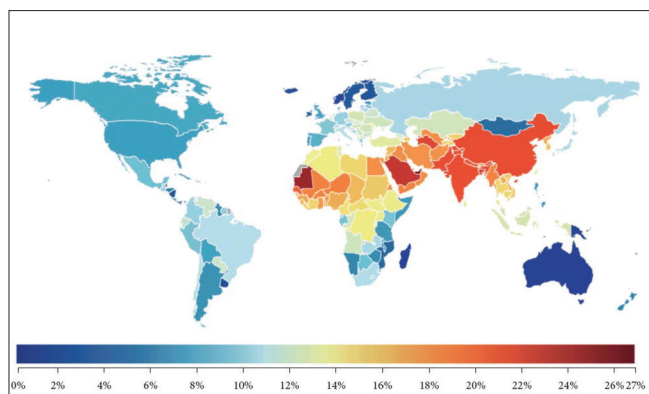


Figure 2: The percentage of stroke-related disability-adjusted life years attributable to air pollution for both sexes in 2013 figure. The percentage of stroke-related disability-adjusted life years attributable to air pollution for both sexes in 2013 Source Most Strokes Worldwide Caused by Modifiable Lifestyle Factors; Air Pollution is to Blame for One-third of Cases *Neurology Today*. 16(13):1,17-19, July 7, 2016

of the coronary care unit in the past. The idea is that a core multidisciplinary team of professionals who primarily treat stroke patients will produce better outcomes and further research more effectively than a general neurology or medical ward team. In the US and Europe, these units have taken a leading role in care and research. Evidence has accumulated that they produce improved outcomes by meticulous attention to the details that frequently occur in stroke patients. The minimum requirements for such a team are a streamlined emergency medical system that delivers patients to the emergency department as soon as possible, accurate triage by the emergency department, 24-h availability of a treating stroke physician (typically a neurologist) and nursing staff, a neurosurgeon, and 24-h availability of neuroimaging with at least CT.^[2]

What was anticipated to be a revolutionary change became evolutionary. Transformation of the structure and organization of stroke care delivery were needed, and in part led to recommendations for the development of primary stroke centers and stroke care systems, each having benefits beyond the administration of intravenous tissue plasminogen activator (IV tPA). For example, patients with intracerebral or subarachnoid hemorrhage cared for at primary stroke center–certified hospitals had lower risk-adjusted mortality rates compared to those at treated noncertified hospitals. Additional innovations include the use of telemedicine to support management decisions at hospitals without stroke care expertise and the advent of mobile stroke units to speed treatment.^[3]

In the recent issue of *Neurology*[®], Domino *et al.*, specifically, address changes in the rate of use of IV tPA for acute ischemic stroke in a bi-ethnic community (Mexican Americans and non-Hispanic whites) without an Academic Medical Center. Using active and passive surveillance, they found that similar to the nation as a whole, IV tPA use remained at 2% from 2000 to 2006 but then increased to 11% by 2012 [Figure 1].^[4]

Air pollution, both outdoor and indoor, is now among the leading causes of stroke worldwide, accounting for approximately

one-third of stroke burden in 2013, according to a detailed analysis of data from 188 countries.^[5] In a developing country like India with particularly higher levels of air pollution in certain regions, curbing the menace of air pollution along with other stroke prevention strategies should be focused on [Figure 2].

It is just about 10% of patients who require endovascular treatment; I am sure that the neurologist should have more time to talk about the stroke prevention. I feel there is absolutely no justification to start a fellowship for stroke intervention. In fact, if at all needed, there's a justification for starting stroke fellowships for 2 years after MD for doctors in the periphery to get a hand on stroke prevention and therapy.

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Conflicts of interest

There are no conflicts of interest.

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