

# “No Time to Die” – Saving the Neurons

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Stroke is the second leading cause of death and third leading cause of disability across the globe.<sup>1</sup> It's often repeated, “Time is Brain.” The ultimate goal in the early management of acute ischemic stroke is to be able to administer thrombolytic therapy to all eligible patients in a time-bound manner. The benefit of this therapy is time-dependent. International guidelines recommend a minimum door-to-needle (DTN) time of <60 minutes as the mode to effectively salvage the insulted brain for an improved clinical outcome and reduced morbidity and mortality.<sup>2</sup>

Each minute of onset-to-treatment time saved granted an average 1.8 days of extra healthy life to stroke patients.<sup>3</sup> Pooled analysis from various trials of ATLANTS, ECASS, and NINDS rt-PA stroke trials showed that sooner the rt-PA administration the greater the benefit in terms of improved recovery and decreased morbidity.<sup>4</sup>

Tong et al.<sup>5</sup> conducted a study collecting data based on the Paul Coverdell National Acute Stroke Program over 10 years from 2008 to 2017. Decreasing DTN time to ≤45 minutes for at least 50% of patients was found to be associated with decreases in adverse events from thrombolysis or in-hospital all-cause mortality and was associated with an increase in discharges to home.

Heikkila et al.<sup>6</sup> conducted a retrospective study highlighting the importance of an emergency physician's role in bringing down the DTN and onset-to-treatment time without increasing the rate of intracerebral hemorrhage. They brought down the DTN time to 20 minutes in their study.

In this issue, we discuss an article by Dr Ankur et al. This single-center “before-and-after” study was carried out on the Indian population. They divided their sample into two groups of 74 patients each—(1) preintervention group, comprising of patients who underwent thrombolysis prior to the implementation of the author's rapid thrombolysis protocol and (2) postintervention group, which comprised patients, who were thrombolized as per the rapid thrombolysis protocol developed by the authors.

In the preintervention group, the DTN time is 54.5 minutes and onset-to-needle time is 150.4 minutes. In the postintervention group, the DTN time is 30 minutes and onset-to-needle time is 123.11 minutes.

The authors have shown to achieve a better neurological outcome and favorable outcome at discharge, as measured by a modified Rankin scale, in postintervention group. This gives credence to the studies conducted earlier, exhorting that the benchmark stroke DTN time should be 30 minutes by the implementation of “rapid stroke protocols,”<sup>7-10</sup> doing away with a longer DTN time of 45 minutes, as recommended by the latest AHA guidelines.<sup>11</sup>

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Poststroke survivors require substantial hospital and social support which causes economic and family burdens as well. In spite of the guidelines which suggest minimizing DTN time, many times the golden hour is wasted. This can be attributed to the lack of training and awareness among physicians to detect stroke chameleons, and delaying treatment to rule out stroke mimics<sup>12</sup> logistical issues, lesser number of facilities in rural areas.

By continuing education and training of the physicians, involving policymakers to remove the logistical hurdles and establishing stroke centers with facilities to detect and administer thrombolysis within the golden hour of stroke, the targets of negating the damaging effects of stroke to a minimum can be achieved.<sup>13,14</sup>

Setting up telestroke units where smaller centers can communicate with centers where they have radiological facilities for acquiring a CT and if required to transfer to the nearest center where they have thrombolysis facility can also be given a thought.

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