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# BE-FAST FASTER ANDFASTEST

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Annual incidence of stroke is 2.5%/1000 people or 200000 stroke /year. Every 5 seconds undergo stroke all over the world. 15-20 % die in first month of brain attack and 75% lives with focal neurological deficit. Ischemic stroke is the most common (85%) after hemorrhagic stroke and subarachnoid hemorrhage (15%). Among all 5 subtypes, large artery atherosclerosis, cardio embolism, small vessel occlusion, stroke of other determined etiology, undetermined etiology, ischemic stroke carries poor prognosis of increasing morbidity and mortality. Window of opportunity is a critical time that need to be addressed to reverse neurological stroke symptoms either partially or completely through active interventional approaches either noninvasive or invasive methods. Thrombolysis has radically changed the prognosis of acute ischemic stroke. Intravenous thrombolytic therapy with recombinant tissue plasminogen activator (rtPA) is effective in reducing the neurological deficit. Time is brain, either you be fast or faster and fastest, early or timely reperfusion therapy within a time frame of 4.5 hours helps to restore normal neurological function.

**Keywords**: ischemia, brain attack, stroke, thrombolysis

Stroke is defined as a rapid onset of neurological deterioration caused by an acute focal injury to the brain lasting for more than 24 hours due to vascular cause. Stroke results due to loss of blood supply, devoid of oxygen and nutrients. It also hampers in elimination of metabolic wastes. These changes obstruct the normal neuronal function that ultimately results into neuronal death and necrosis. Brain tissue is principally sensitive to these changes.

Annual incidence of stroke is 2.5%/1000 people or 200000 stroke /year. Every 5 seconds undergo stroke all over the world. 15-20 % die in first month of brain attack and 75% lives with focal neurological deficit. Stroke is second leading cause of death after coronary artery disease, third leading cause of death in United State of America. It is third most common cause of disability in more than half of the stroke survivors in age 65 and over. Economic burden of stroke on the nation through health care services, medications and rehabilitation services. Loss of productivity is around 33 million dollar annually.

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carries poor prognosis of increasing morbidity and mortality.

Occlusion of an intracranial vessel by an embolus that arise at a distant site that leads to hypoperfusion. Thrombus can lead to ischemia or occlusion of an artery that subsequently result into cerebral infarction or tissue death. Ionic pump fails leading to membrane depolarization and influx of calcium ions and efflux of potassium ions. Increase intracellular calcium trigger the release of excitatory amino acids neurotransmitter called Glutamate. Ultimately excessive intracellular calcium activates proteases, lipases and free radicals results into progression of ischemic cascade. Brain loses its ability to produce energy (ATP) once blood supply is interrupted leading to anerobic metabolism. By- product, lactic acid destroys normal acid-base balance. Loss of vascular integrity results in a breakdown of blood brain barrier and contributes to cerebral edema that causes secondary brain damage.

Increasing age, male gender, Asian people are non-modifiable risk to develop symptoms of stoke. Previous history of myocardial infarction, transient ischemic attack, peripheral vascular disease carries additional risk. Cigarette smoking, high blood pressure, diabetes mellitus, excessive alcohol consumption, hyperlipidemia, heart diseases like atrial fibrillation, infective endocarditis, valvular heart disease, paradoxical emboli, congestive cardiac failure are modifiable risk factors. Besides cardiac sources, patients with atherosclerosis or dissection in the carotid and vertebrobasilar tree, hypertension induced small vessel occlusive disease, systemic lupus erythematosus, hematological diseases like polycythemia, proteinC or S deficiency, Factor V Leiden hypercoagulable state are also at risk to develop brain attack.

**How to identify early?**

Ischemic core in brain tissue is destined to die rapidly and penumbra is salvageable brain area after restoration of blood blow. This reinforces the need to educate health professionals and the general public about the stroke symptoms so that these patients can be quickly identified and treated.

Signs and symptoms of stroke as shown in table.

**Table 1: BE FAST, FASTER, ANDFASTEST**

| | **BE-FAST** | | **FASTER** | | **AND FASTEST** |
|---|---|---|---|---|---|
| | | | | | |
| **B** | BALANCE imbalance | **F** | FACE drooping/ weakness | **A** | Altered consciousness, confusion |
| **E** | EYE visual abnormality | **A** | ARM weakness | **N** | Numbness |
| **F** | FACE drooping/weakness | **S** | STABILITY imbalance | **D** | Dizziness |
| **A** | ARM weakness | **T** | TALKING slurring or aphasia | **F** | FACE drooping/ weakness |
| **S** | SPEECHslurringor aphasia | **E** | EYE visual abnormality | **A** | ARM weakness |
| **T** | TIME to act immediately | **R** | REACT immediately | **S** | Sudden Severe Headache |
| | | | | **T** | TALKING slurring or aphasic |
| | | | | **E** | EYE visual abnormality |
| | | | | **S** | STABILITY imbalance |
| | | | | **T** | TIME to act immediately |

**Treatment**

Window of opportunity is a critical time that need to be addressed to reverse neurological stroke symptoms either partially or completely through active interventional approaches either noninvasive or invasive methods. Thrombolysis has radically changed the prognosis of acute ischemic stroke. Intravenous thrombolytic therapy with recombinant tissue plasminogen activator (rtPA) is effective in reducing the neurological deficit. rtPA should be received within an hour after arriving to the hospital but not more than 4.5 hours after the onset of stroke symptoms. This helps to Control propagation of ischemic penumbra and reverse the deficit.

Endovascular stroke therapy for ischemic stroke is much beneficial than IV thrombolysis alone. Patients with ischemic stroke with restricted perfusion imaging with a proximal cerebral arterial occlusion and salvageable tissue on CT perfusion imaging falls in intervening criteria for early thrombectomy. Interventional mechanical devices like Solitaire FR stent retriever had been producing better results than with IV thrombolysis alone. Mechanical thrombectomy devices improve reperfusion instantly, and results into early neurological recovery and functional outcome. Studies have been showing good results with combined use of endovascular stroke therapy with thrombolytic agents.

Since therapeutic window needed to prevent is narrow, early identification and

early intervention is mandatory for controlling propagation of ischemic penumbra to reverse neurological deficit. BNC hospital stroke group is ready to go for intravenous thrombolysis and interventional therapy to cure stroke. BNC hospital is a multispecialty teaching hospital with high quality imaging facilities. BNC stroke group has been specially trained for emergency management and early identification of stroke symptoms. It will cut down intrahospital delay and brings diagnosis within the short therapeutic window of ischemic stroke. Our goal is to improve delivery of aforementioned resources for the best possible outcome.

**Stroke awareness program**

Lack of information of the population that continues to ignore the main clinical signs and absence of standard prehospital care.Stroke awarenessis crucial for the faster treatment and better results. Risk factors control is another steps that has to be initiate at community level. Cigarette smoking, alcohol intake prohibition, Blood pressure control, maintaining normal sugar level, weight reduction, modifying sedentary life, early identification and treatment of cardiac and vascular causes.

## Conclusions

Time is brain, either you be fast or faster and fastest, early or timely reperfusion therapy within a time frame of 4.5 hours helps to restore normal neurological function.

## References

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