

CDE #36487: 'THE WORST HEADACHE EVER'

received tPA within three hours of the onset of symptoms were at least 30% more likely than placebo patients to recover from their stroke with little or no disability after three months. The use of tPA or similar drugs is generally referred to as thrombolytic therapy.

THE STATS

Each year, nearly 800,000 people suffer a stroke. Stroke is the third leading cause of death and the most common cause of disability in the U.S.² Stroke can cause

significant disability, including paralysis, speech impediments and emotional problems. Among stroke patients, one-third will die, one-third will be disabled and one-third will experience little or no disability. Approximately 25% of those who recover from a stroke will have another stroke within five years. Treatments are available that can reduce the damage caused by a stroke for some victims, but these treatments need to be administered as soon as possible after symptoms start.

According to the American Heart Association, the direct and indirect medical cost associated with stroke was \$73.7 million in 2010. The average out-of-pocket cost per patient in the first 30 days after a stroke was \$20,346, but average lifetime cost of ongoing medical care reached \$140,048.³

SIGNS, SYMPTOMS & TREATMENT

A stroke occurs when the blood supply is suddenly cut off to part of the brain or when a blood vessel in the brain bursts and blood spills out around the brain cells. Thus, patients may present with either ischemic or hemorrhagic stroke, respectively.

Ischemic strokes account for approximately 80% of all strokes, with hemorrhagic strokes accounting for the remaining 20%.⁴ Hemorrhagic strokes can be further classified as intracerebral (12%) and subarachnoid (8%). The most common cause of an ischemic stroke is from a blood clot that forms in the vascular system.

Note: For treatment purposes, the

majority of this discussion will focus on the ischemic stroke. It is the most common and is the one we can treat the most successfully.

A clot can form anywhere in the body and travel up to plug a cerebral artery (called a thromboembolism). Possible

"Time wasted means critical tissue damage"

sources of the clot could be the heart, the arteries that supply blood to the brain or the blood itself crossing the blood-brain barrier. The most common cause of an intracerebral hemorrhage is chronic hypertension, while the most common cause for a subarachnoid hemorrhage is a ruptured aneurysm.

Callers may describe several signs and symptoms that indicate stroke.⁵ These include sudden numbness or weakness of the face, arm or leg, especially on one side of the body; sudden confusion, difficulty speaking or understanding others; sudden trouble with vision in one or both eyes; sudden difficulty walking, dizziness, loss of balance or coordination; and sudden severe headache with no known cause. Some patients describe the feeling as "the worst headache ever." Other warning signs are double vision, drowsiness and nausea or vomiting.

There are many risk factors associated with stroke; some are modifiable with behavior and healthy habits, and some are not. Risk factors that are not modifiable include advanced age, male gender and family history of myocardial infarction or early stroke. Risk factors that can be modifiable include hypertension (systolic and diastolic), diabetes mellitus, hypercholesterolemia, cigarette smoking, prior stroke/transient ischemic attacks (TIAs, or mini-strokes), carotid disease, heart disease (especially atrial fibrillation), hypercoagulable states and drug/alcohol abuse.

When a patient is presenting signs of stroke, treatment should be focused on salvation of the penumbra, a zone of reversible ischemia around the core of

irreversible infarction. The penumbra is salvageable in the first few hours after ischemic stroke onset. One cannot determine by exam how much of the brain can still be saved. It is for this reason that treatment should be centered on a common chain of survival.

That chain of survival comprises the "seven Ds":

1. *Detection*: recognizing symptoms at stroke onset

2. *Dispatch*: EMS activation and response

3. *Delivery*: prehospital care en route to hospital (exam should include both the Cincinnati Prehospital Stroke Scale and the National Institutes of Health Stroke Scale)

4. *Door*: effective triage in the ED

5. *Data*: ED evaluation; CT scan

6. *Decision*: if the patient is a candidate, consider thrombolytic therapy

7. *Drug*: tPA can reduce the risk of disability by 30%, but must be administered within three hours of the onset of symptoms.

THE EMD'S RESPONSIBILITIES

What is the 9-1-1 telecommunicator's role in the case of a stroke? Our primary concern is with the first three Ds. In the detection phase, for example, we need to ensure telecommunicators are trained and certified in EMD. Nothing can take the place of training. A key to minimizing long-term disabilities, and even the likelihood of death, is getting the patient to an appropriate care facility within three hours of the onset

