Stroke: Time is Brain

Judy Clark, RN, BSN
Massachusetts General Hospital
Department of Neurology – Stroke
Objectives

- Stroke warning signs and symptoms
- What to do when Stroke signs and symptoms are identified
- Types of strokes
- Acute stroke therapies
- Non-modifiable and modifiable risk factors
- Stroke prevention
- Caregivers
Stroke is a Medical Emergency

Target Stroke: Acute Care & EMS

The sooner that rt-PA is given to stroke patients, the greater the benefit, especially if started within 90 minutes of symptom onset.
A Stroke occurs when the blood supply to the brain is interrupted, either due to a blockage or a rupture in the blood vessel. When this occurs, the brain is deprived of oxygen and nutrients causing brain cells to die.
Frontal lobe
Executive functions, thinking, planning, organising and problem solving, emotions and behavioural control, personality

Motor cortex
Movement

Sensory cortex
Sensations

Parietal lobe
Perception, making sense of the world, arithmetic, spelling

Occipital lobe
Vision

Temporal lobe
Memory, understanding, language
Disability

- Stroke is a leading cause of adult disability in the US.
- With timely treatment, the risk of death and disability from stroke can be lowered.
- In 2010, stroke cost the US approx $73.7 billion in health care services, medications, and lost productivity.
Estimated Cost of Stroke

- Hospital $25,409/stroke
- Nursing Home care $20,377/stroke
- Physicians/other professionals $4,654/stroke
- Medical durables $1761/stroke
- Home healthcare $5535/stroke
- Loss of productivity/earnings $28,931/stroke
- Loss of productivity cost taxpayers in the state of Massachusetts $8.4 billion dollars in the year 2009
The Stroke Continuum

Prevention

Recognition

Re-integration to the Community

Rehabilitation

Inpatient Hospitalization

Emergency Department

9-1-1

Emergency Medical Services
F.A.S.T.

SPOT A STROKE F.A.S.T.

Click on the middle graphic to learn how and why to spot a stroke fast.

F.A.S.T. IS AN EASY WAY TO REMEMBER THE COMMON STROKE WARNING SIGNS. WHEN YOU CAN SPOT THE SIGNS, YOU’LL KNOW THAT YOU NEED TO CALL 9-1-1 FOR HELP RIGHT AWAY.

FACE DROOPING
Does one side of the face droop or is it numb? Ask the person to smile. Is the person’s smile uneven?

ARM WEAKNESS
Is one arm weak or numb? Ask the person to raise both arms. Does one arm drift downward?

SPEECH DIFFICULTY
Is speech slurred? Is the person unable to speak or hard to understand? Ask the person to repeat a simple sentence, like “The sky is blue.” Is the sentence repeated correctly?

TIME TO CALL 9-1-1
If someone shows any of these symptoms, even if the symptoms go away, call 9-1-1 immediately.

If you think you are having a stroke, call 9-1-1 immediately! Quick treatment in 3-4 1/2 hours can improve chances of recovery!

TAKE QUIZ

Brought to you with a charitable grant by Genentech

MEDTRONIC

AMERICAN HEART ASSOCIATION AMERICAN STROKE ASSOCIATION

Together to End Stroke

NATIONALLY SPONSORED BY:

MASSACHUSETTS GENERAL HOSPITAL

FIREMAN VASCULAR CENTER
Sudden Symptoms of Stroke

• Beyond F.A.S.T. – Other Symptoms You Should Know
  – Sudden **NUMBNESS** or weakness of face, arm, or leg, especially on one side of the body
  – Sudden **CONFUSION**, trouble speaking or understanding speech
  – Sudden **TROUBLE SEEING** in one or both eyes
  – Sudden **TROUBLE WALKING**, dizziness, loss of balance or coordination
  – Sudden **SEVERE HEADACHE** with no known cause

• **If someone shows any of these symptoms, immediately call 9-1-1 or emergency medical services**
• What would you do if you have Stroke Symptoms or see someone who has Stroke symptoms?
Types of Stroke

Cerebral artery

Blockage

Rupture
Different Types of Stroke, 2000

- Cerebral Embolus: 24%
- Intracerebral Hemorrhage: 9%
- Subarachnoid Hemorrhage: 3%
- TIA: 3%

Ischemic Stroke: 88%

Cerebral Thrombosis: 61%

Hemorrhagic Stroke: 12%

TIA = transient ischemic attack.

Ischemic Stroke

- Ischemic stroke is the most common type of stroke. An ischemic stroke happens when an artery in the brain is blocked. There are two types of ischemic stroke.
Embolic Stroke

- An embolic stroke is caused by a blood clot or a plaque that travels from another area of the body, usually from the heart or the large arteries leading to the brain. When it reaches the brain, the clot blocks a blood vessel which causes a stroke.
Thrombotic Stroke

- Thrombotic strokes are caused by a clot or plaque fragment that forms inside an artery in the brain and causes a stroke.
Medication Treatment for Acute Ischemic Stroke

- IV t-PA is the only FDA-approved treatment for ischemic strokes.
- It can improve outcomes of Stroke patients.
- It is a clot-busting drug that is given through an IV in the arm and may restore blood flow to that area of the brain.
- It needs to be given within 3 hours of Stroke symptoms or within 4.5 hours for certain eligible patients for it to be effective.
Mechanical Endovascular Treatment for Ischemic Stroke

• Some patients who have had stroke symptoms within 6 hours may be eligible for a procedure which can physically remove the clot.

• A specially trained doctor threads a catheter through and artery to the blocked artery in the brain. The stent opens and grabs the clot, which then is removed from the vessel hopefully restoring blood flow to that area of the brain.
Endovascular Treatment
Before Endovascular Treatment
After Endovascular Treatment
Intracerebral Hemorrhage

- Intracerebral Hemorrhage: Bleeding from a ruptured blood vessel in the brain. Symptoms include sudden headache, nausea, impaired consciousness and neurological dysfunction.
- High Blood Pressure is the most common cause of ICH.
Intracerebral Hemorrhage
Subarachnoid Hemorrhage

- Subarachnoid hemorrhage usually occurs spontaneously.
- It causes bleeding from in between the arachnoid membrane and the pia mater.
- It is usually caused by a ruptured aneurysm.
Subarachnoid hemorrhage
What is a TIA?
• TIA is a medical emergency and a warning sign too dangerous to ignore

• The 90 day risk of recurrent stroke was significantly reduced with rapid assessment and treatment
  – 10.3% → 2.1%

• By 90 days, the odds of neurological deterioration were 5 times greater for TIA patients than for stroke patients
• Up to 500,000 TIA’s are estimated each year; the incidence may be higher as many go unrecognized or unreported
• As many as 10% of patients will suffer a stroke in the 48 hours following a TIA
• Up to one-quarter of TIA patients will die within 1 year
• The financial impact is huge
Post-Stroke Rehabilitation

- Rehabilitation is a very important phase of recovery. It helps you return to independent living.
What Will I do in Rehabilitation?

- Self care skills
- Mobility skills
- Communication skills in speech and language
- Cognitive skills such as memory or problem solving
- Social skills for interacting with people
Uncontrollable Risk Factors for Stroke

- Age
- Gender
- Race and Ethnicity
- Family History
- Previous Stroke
- Fibromuscular Dysplasia
- Patent Foramen Ovale
- Transient Ischemic Attack
Controllable Risk Factors for Stroke

• High Blood Pressure – # 1 cause of Stroke
• Tobacco Use
• Diabetes
• High Cholesterol
• Physical inactivity and obesity
• Carotid or other artery disease
• Transient ischemic attacks
• Atrial Fibrillation
• Certain blood disorders
• Excessive alcohol intake
• Illegal drug use
Stroke Prevention

• Up to 80% of Strokes can be prevented
• Healthy diet
• Healthy weight
• Physical activity
• No smoking
• Limited alcohol
Stroke Caregivers

- Organize healthcare needs
- Provide emotional support
- Promote independence
- Provide socialization opportunities for yourself and your survivor
Thank you!