EMS Stroke Conference

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Cerebral blood flow

Stroke Background

- Third leading cause of death in the U.S.
- Approx. 700,000 people suffer strokes each year
- Incidence increases with age
- Mortality from stroke increases with age
- Frequent cause of disability
- Pre-hospital care has been primarily supportive

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Stroke in the Pre-Hospital Setting

- Stroke must be suspected quickly by EMT's and Paramedics in the field.
- Extensive neurological neurological exams are impractical in the pre-hospital setting
- After assessment, notify hospital,rapid transport without delay to closest certified stroke facility

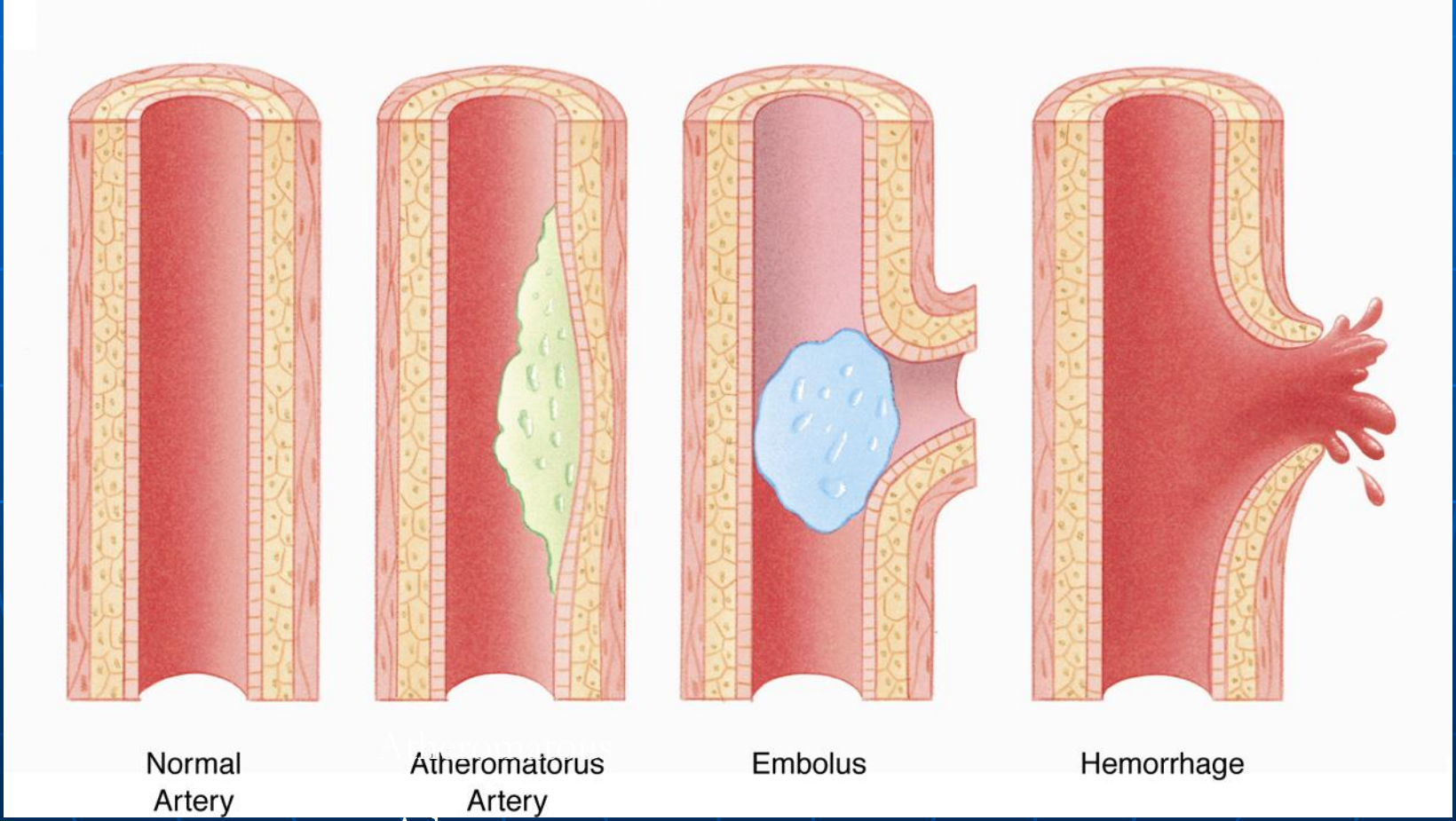
Cincinnati Pre-hospital Stroke Scale

- Patients with 1 of these three finding- *(as a new event)*- have 72% probability of ischemic stroke
- If all (3) findings are present probability of an acute stroke is more than 85%
- Immediately contact medical control and destination ED and provide pre-arrival notification

Stroke Assessment

- One of the most important aspects of your patient assessment must be the time of onset of first symptom
- Document time the patient was last seen acting normal
- The onset time has the most important implications for potential therapy.
- Early notification to STROKE facility is essential
- Careful assessment of a stroke is a must, signs of stroke can be very subtle

Etiology Overview



Atheromatous

Source: Brady CD, Paramedic Care: Principles & Practice Vol.3 ©2001

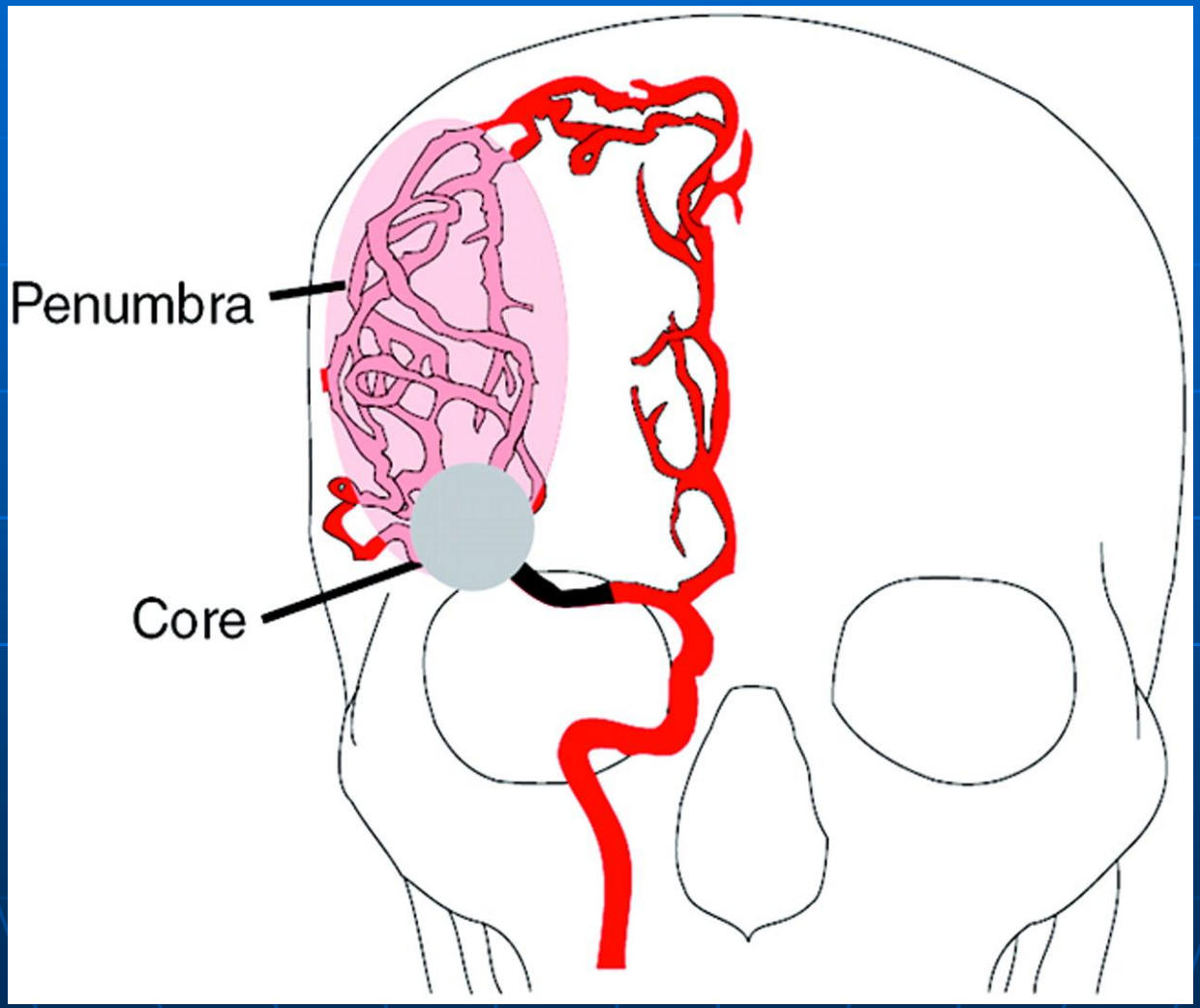
Stroke Risk Factors

- High blood pressure
- Atrial fibrillation, CHF
- High cholesterol
- Diabetes (twice the risk)
- Smoking (50% higher risk)
- Alcohol or Drug Abuse
- Inactivity or Obesity
- Clotting problems (OCP, Sickle Cell)

Stroke Risk Factors (con't)

- Prior Stroke History
- Heredity
- Age (risk increases with age)
- Gender
  - more common in men
  - more women die from stroke
- Race (greater risk among African Americans)

stroke



Transient Ischemic Attacks (TIA's)

- Temporary interruption of blood supply to brain
- Carotid artery disease a common cause
- Stroke-like neurological deficit symptoms
  - abrupt onset
  - Symptoms resolve in less than 24 hours, usually within minutes.
  - No long-term effects, but high stroke risk

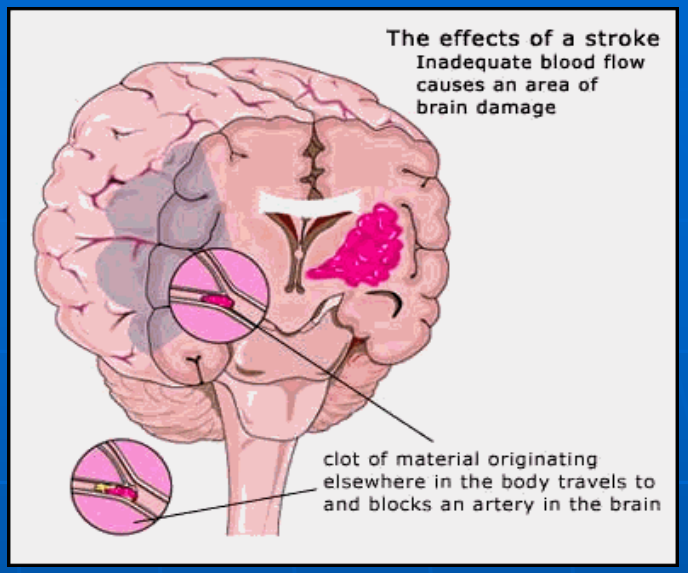
TIA's, (con't)

- One third of TIA patients will suffer an acute stroke
- Evaluate through history taking:
  - History of HTN, prior stroke, or TIA
  - Symptoms and their progression
- Impossible (at this time) in pre-hospital setting to determine if a neurological event is due to TIA or stroke

Ischemic Stroke

- About 80% of all strokes
- Occurs when a cerebral artery is blocked by a clot or other foreign matter
- Causes *ischemia* (inadequate blood supply to tissue)
- Progresses to *infarction* (death of tissues)
- Classified as:
  - Embolic Stroke
  - Thrombotic Stroke

Ischemic Stroke



- **Embolic**
  - The occlusion is caused by an *embolus* (solid, liquid, or gaseous mass) carried to a blood vessel from another area
  - Most common emboli are blood clots
  - Risk factors for blood clots include Atrial Fibrillation and diseased or damaged carotid or vertebral arteries
  - Rare causes of emboli include air, tumor tissue, and fat
  - Occurs suddenly & may rarely be accompanied by headache

Source: http://www.irishhealth.com/?level=4&con=8

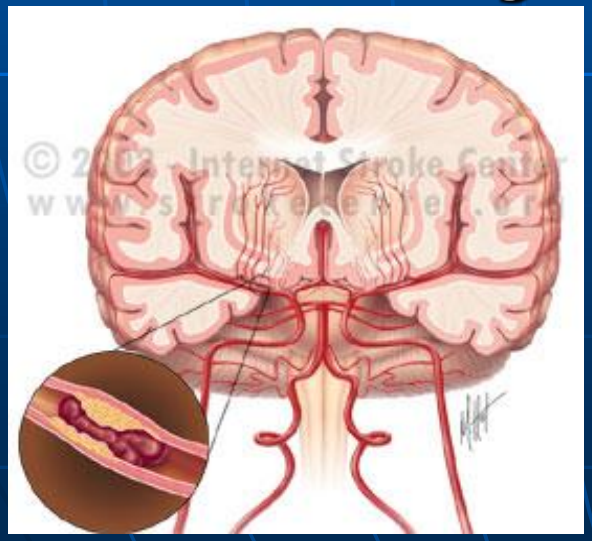
Ischemic Strokes

Thrombotic

- The occlusion is caused by a *cerebral thrombus*; a blood clot which develops gradually in a previously diseased artery and obstructs it
- Caused by atherosclerosis:
  - atheromatous plaque deposits form on the inner walls of arteries, resulting in narrowing and reduction of blood flow
  - platelets adhere to the roughened surface of the plaque deposit and a blood clot is created

Ischemic Strokes

- **Thrombotic** (con't)
  - Signs & symptoms may develop more gradually
  - Often occurs at night with patient awakening from sleep with symptoms



Source: http://www.strokecenter.org/pat/ais.htm

Hemorrhagic Strokes

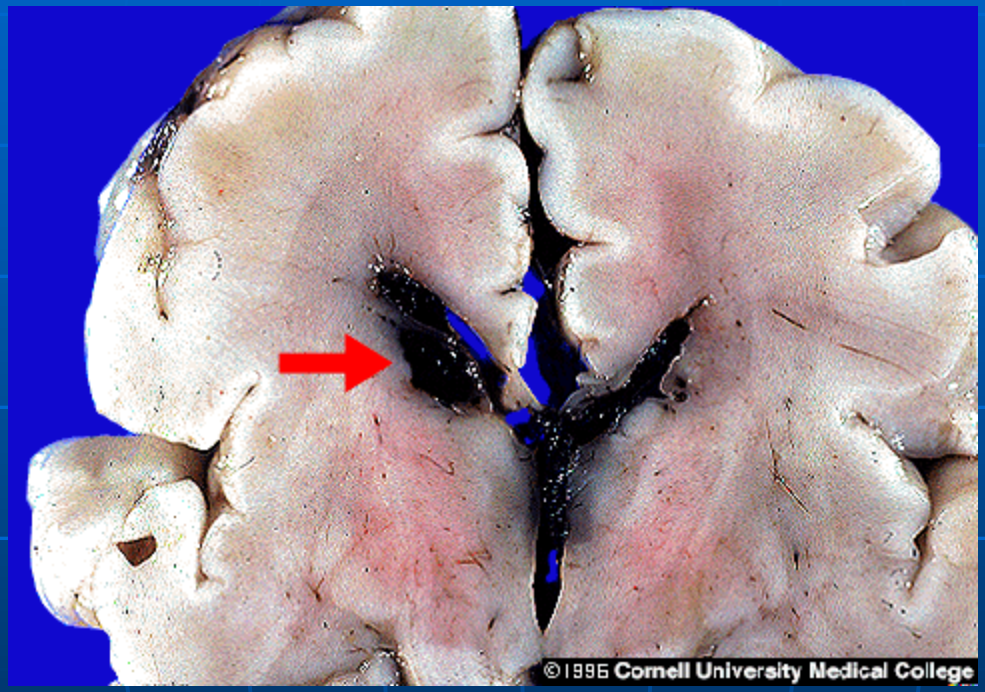
- About 20% of all strokes
- Onset usually sudden with severe headache
- Classified as:
  - Intracerebral hemorrhage (within the brain)
  - Subarachnoid hemorrhage (in the fluid filled spaces around the blood vessels outside the brain)

- Intracerebral hemorrhage

  •Most occur in the hypertensive patient when a small vessel within the brain tissue ruptures

  •Hemorrhage inside the brain often tears and separates brain tissue

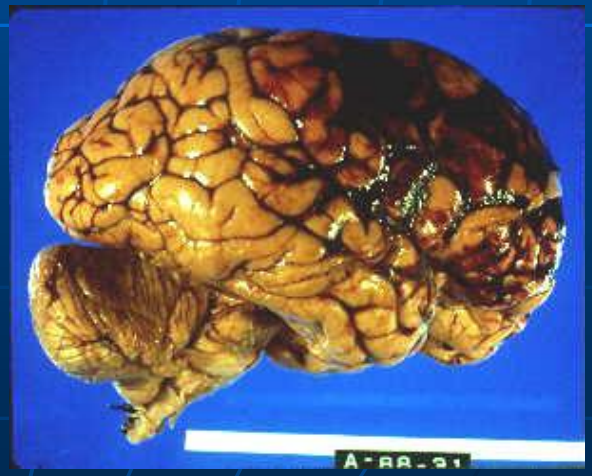
Intracerebral Hemorrhage



Often caused by a ruptured blood vessel within the brain tissue of the hypertensive patient.

Hemorrhagic Strokes

- **Subarachnoid hemorrhage**
  - Most often result from congenital blood vessel abnormalities (e.g., aneurysm) or head trauma
  - •Herniation of brain tissue may occur
  - •Blood in the subarachnoid space may impair drainage of cerebrospinal fluid and cause a rise in intracranial pressure



Source: http://medic.med.uth.tmc.edu/edprog/Path/NeuroIIb.htm

Hemorrhagic Stroke

Face

Arm

Speech

Time

Learn these signs of stroke.

Be a hero. Save a life.

Call 9-1-1

GCNKSS and Massachusetts DPH.

Time-Sensitive Therapy

- ***Transport*** to PSC within 2 hours of symptom onset if possible
- EMS must determine the exact time of onset as accurately as possible and also note the time the patient was last seen acting normal
- Time = Brain Tissue

Team Approach

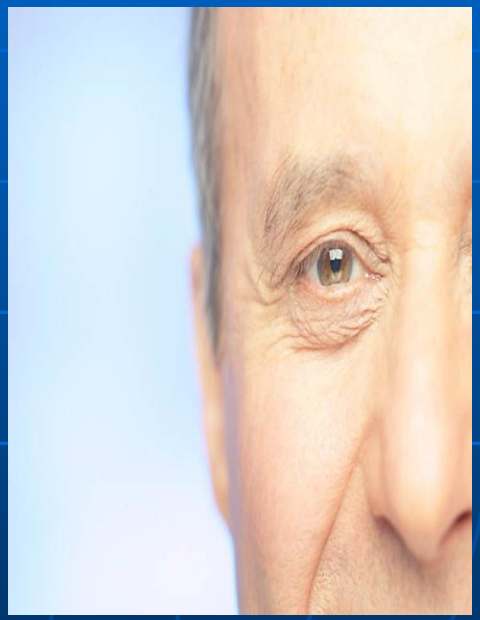
- Detection
  - Importance of early recognition by lay public
- Dispatch (9-1-1)
  - Obtains pertinent info; identifies urgency
- Delivery (EMS)
  - Evaluates, obtains symptom onset, minimizes on scene time; immediate transport and pre-notification to PSS as soon as possible!

Stroke

- Once the diagnosis of stroke is suspected, ***time in the field must be minimized.***
- The presence of a patient with acute stroke is a ***"load and go"***
- A more extensive examination or initiation of supportive therapies should be accomplished en-route to the hospital.

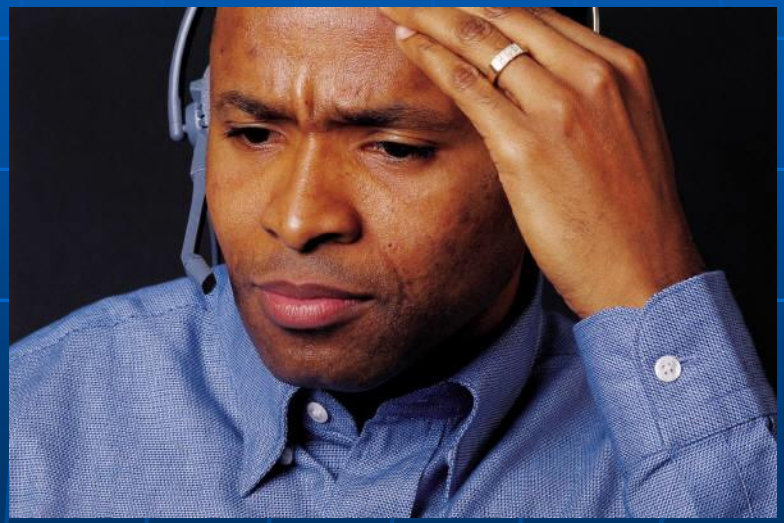
Stroke: Signs & Symptoms

- Paralysis on one side
- Facial Droop
- Limb Weakness
- Paresthesias/Sensory loss
  (numbness or tingling)
- Ataxia
  - Gait Disturbance
  - Uncoordinated fine motor movements



Signs & Symptoms

- Speech Disturbance
- Vision Problems
- Headache
- Confusion/Agitation
- Dizziness/Vertigo



CINCINNATI STROKE SCALE

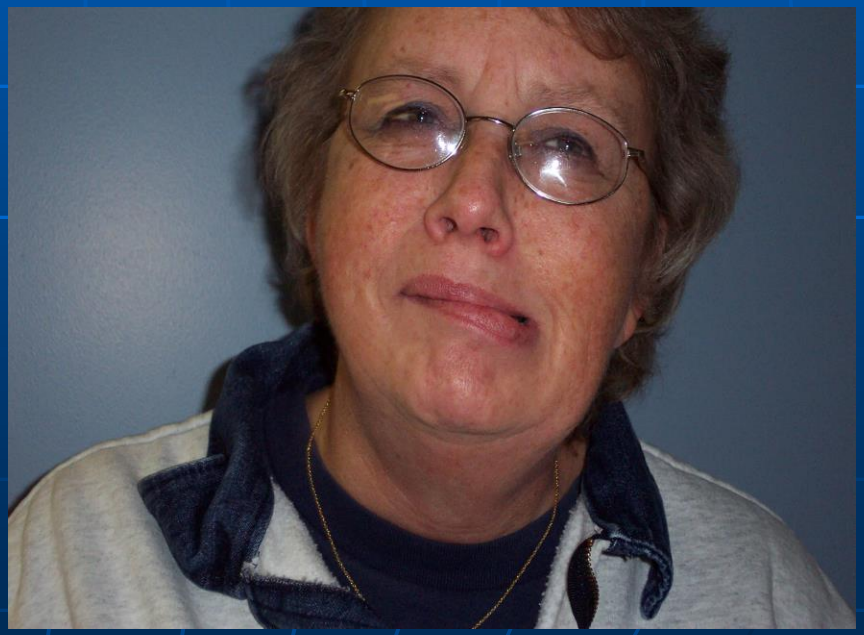
- Identifies patients with strokes.
- Evaluates three major physical findings.
  - Facial droop
  - Motor arm weakness
  - Speech abnormalities

FACIAL DROP

- FACIAL DROOP
  - Patient shows teeth or smiles

NORMAL

ABNORMAL

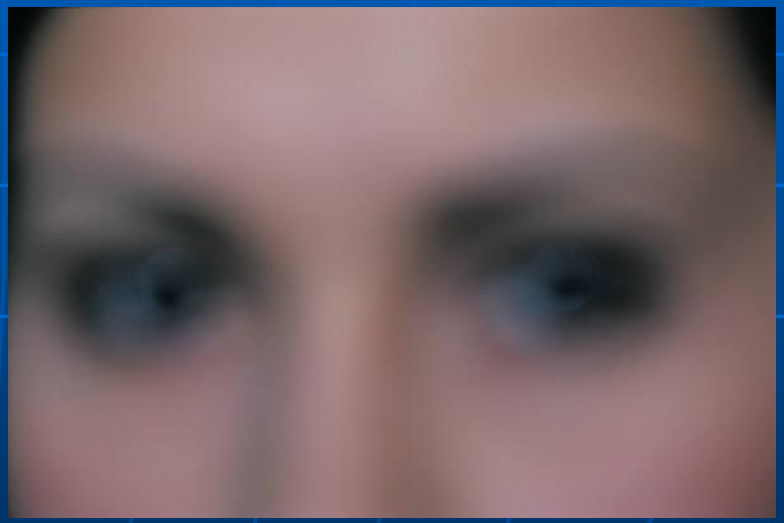


Speech Disturbance

- Aphasia
  - Inability to speak
- Dysphasia
  - Difficulty speaking
- Dysarthria
  - Impairment of the tongue muscles essential to speech

Vision Problems

- Nystagmus
  - Involuntary jerking of the eyes
- Diplopia
  - Double vision
- Monocular blindness
  - Blindness in one eye



Arm Drift

- Have the patient close his / her eyes and hold both arms out
- Normal-both arms move the same way. or both arms do not move at all
- Abnormal- one arm does not move or one arm drifts down compared to the other arm.
  - *Other findings such as pronater grip may be helful.*

Pre-hospital Care

- Notify receiving facility ASAP
- Monitor/record VS every 5 minutes if unstable, or every 15 minutes if stable
- Position the patient, protecting paralyzed extremities
- Secure patient to stretcher and transport rapidly without excessive movement or noise
- Use treatment eligibility checklist en-route & include information in documentation

Scenario 1

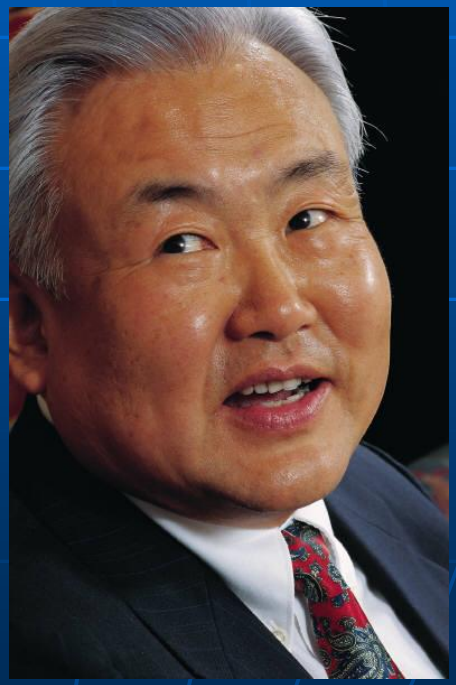
- 67 year old female at home
- Chief complaint dizziness
- History of NIDDM

Scenario 1 examined

- There could be other causes of dizziness, do not rule out stroke. Review other causes.
- Older patients and those with Diabetes are at increased risk of ischemic stroke.
- Discuss the other findings that might make you think this patient is experiencing a stroke.

Scenario 2

- 54 year old male at minor MVA
- Chief complaint sudden onset headache
- History of hypertension



Scenario 2 examined

- The MVA may have caused the headache, but maybe the headache caused the MVA. Remember to consider all the possibilities.
- Patients with hypertension are at increased risk of ischemic stroke and intracerebral hemorrhage.
- Headache is unusual in ischemic stroke, but is the hallmark of hemorrhagic stroke.

Summary

Early detection of CVA / TIA in the pre-hospital care setting can have a dramatic effect of the mortality and morbidity of patients. Using the Cincinnati Stroke Scale pre-hospital personnel can quickly and accurately access the neurological status of a patient presenting with signs and symptoms of a CVA / TIA