

Stroke

*Early Recognition and Action;
The keys to optimal outcomes*

Brad Fowler,
Paramedic
Middlesex Health Community Stroke Educator

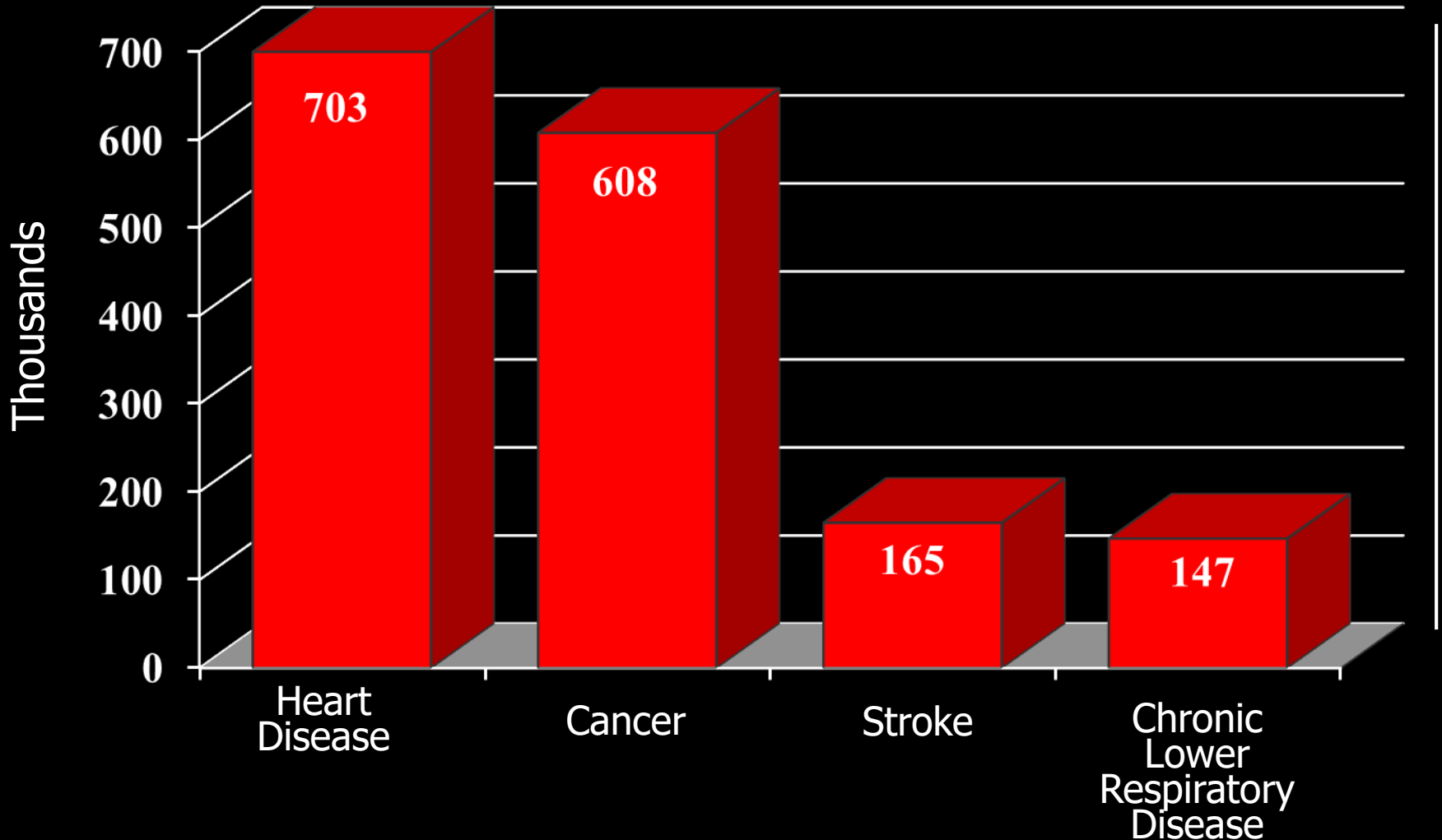
Stroke

**Brain tissue damage
due to the interrupted
supply of oxygen and
nutrients**

U.S. Socioeconomic Impact

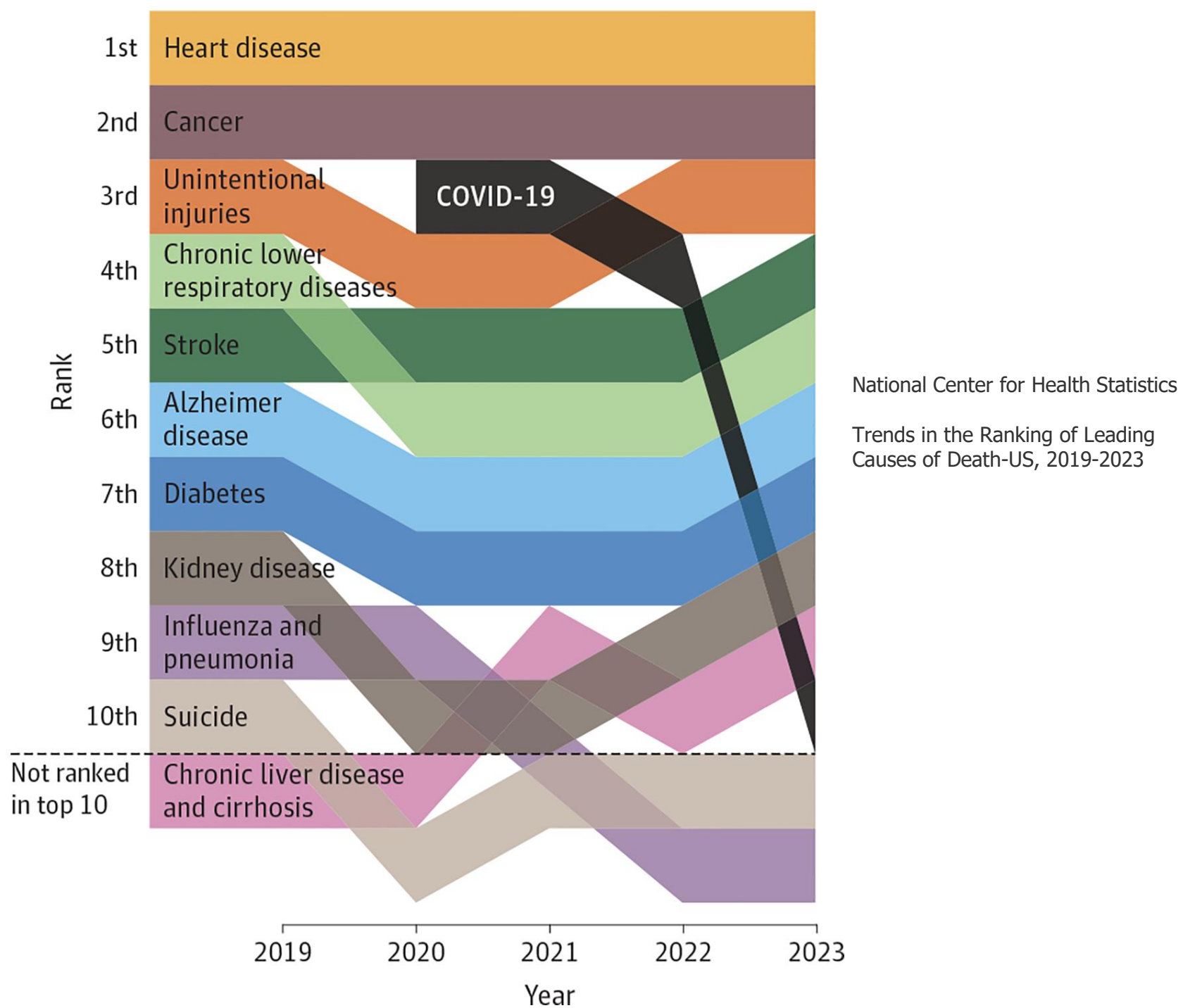
- **795,000 strokes/year**
 - 1 Every 40 seconds
 - 610,000/185,000
- **165,393 deaths (2022 CDC)**
 - 1 every 3 min, 11 seconds
- **6 million survivors**
- **\$56.2 billion²⁰²⁰ (est. \$184.1²⁰³⁰)**
 - I/S MLC \$140,048

Major Medical Causes of Death

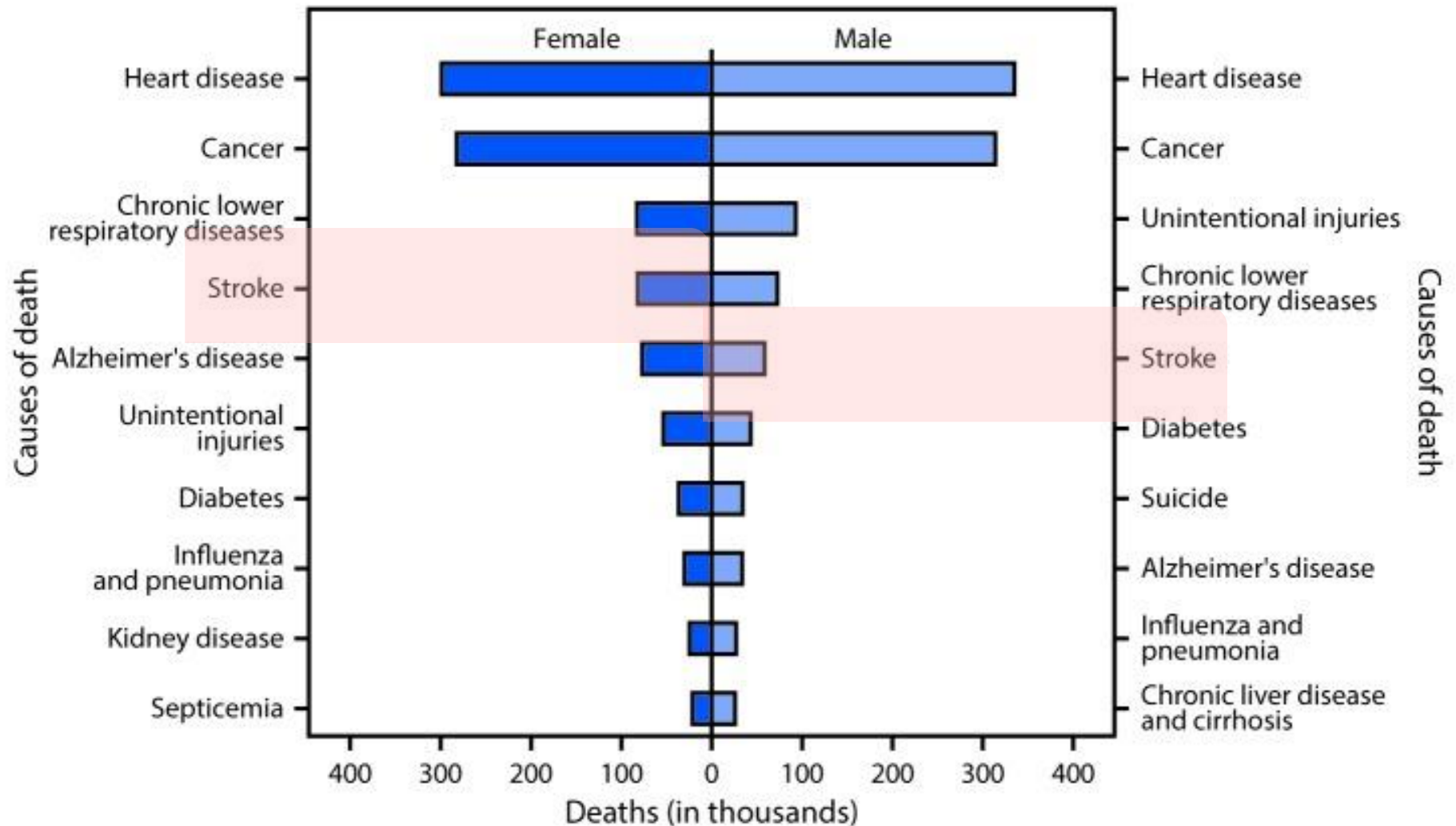


Stroke carries a 25% mortality rate

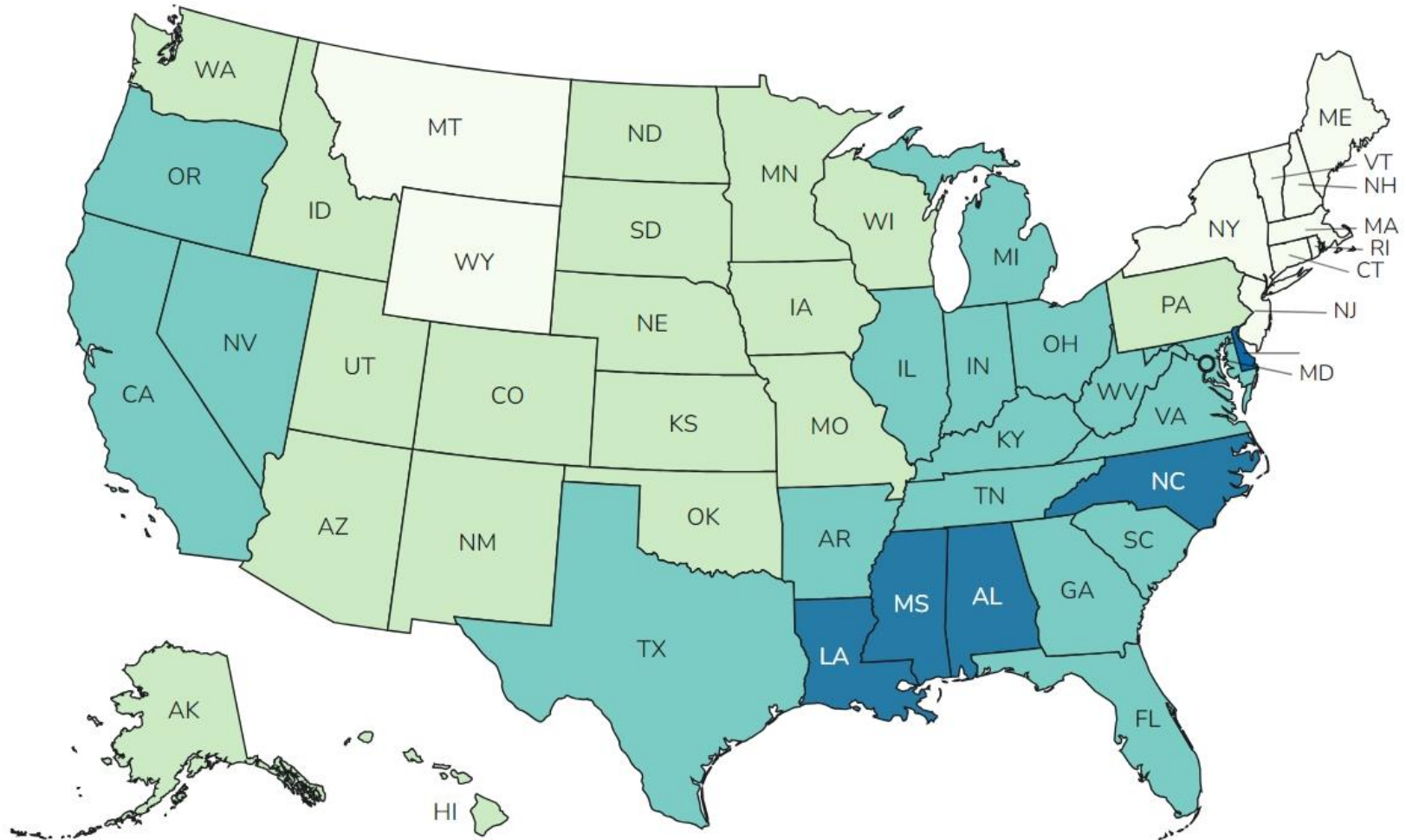
Source: CDC Mortality in the United States, 2022, data table for figure 4



CAUSES OF DEATH BY GENDER



Stroke Deaths (per 100,000) by State



Age-Adjusted Death Rates¹

23.8 - < 31.7

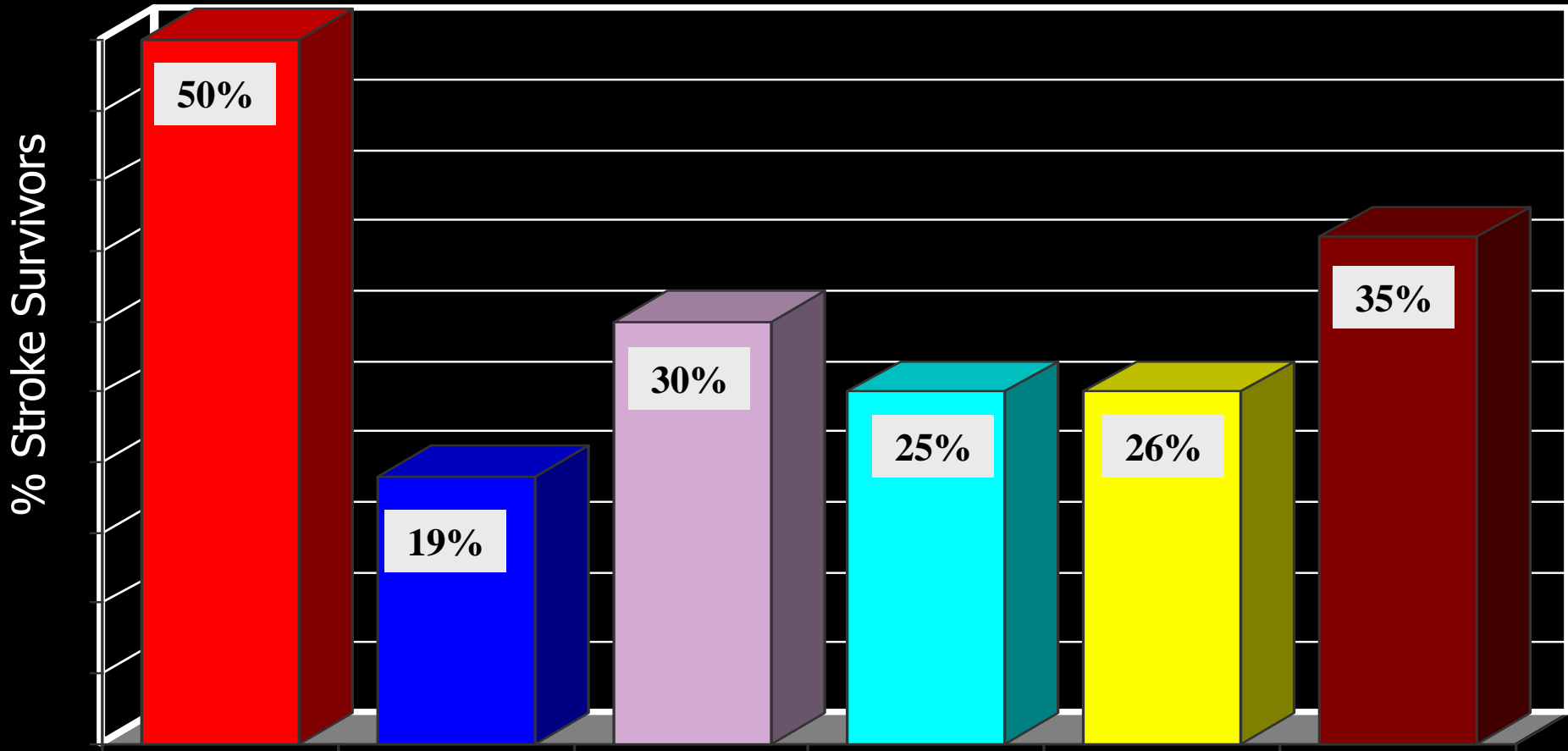
31.7 - < 39.6

39.6 - < 47.5

47.5 - < 55.4

CDC 2022

Quality of Life Impact



Stroke is the leading cause of long-term disability

The National Heart, Lung, and Blood Institute's (NHLBI) Framingham Heart Study

Primary Cell Death

Site of blood flow disruption

Primary Cell Death

Disruption of blood flow



**Cell starved of
oxygen and nutrients**



Cellular breakdown



Release of toxins, absorption of water



Cell death within 4 - 5 minutes

Secondary Cell Death

Secondary Cell Death

Nearby cell death causes



Exposure to toxins



"low energy" state to survive



Additional cell death if blood flow not promptly restored

Types of Stroke

Blocked
Ischemic

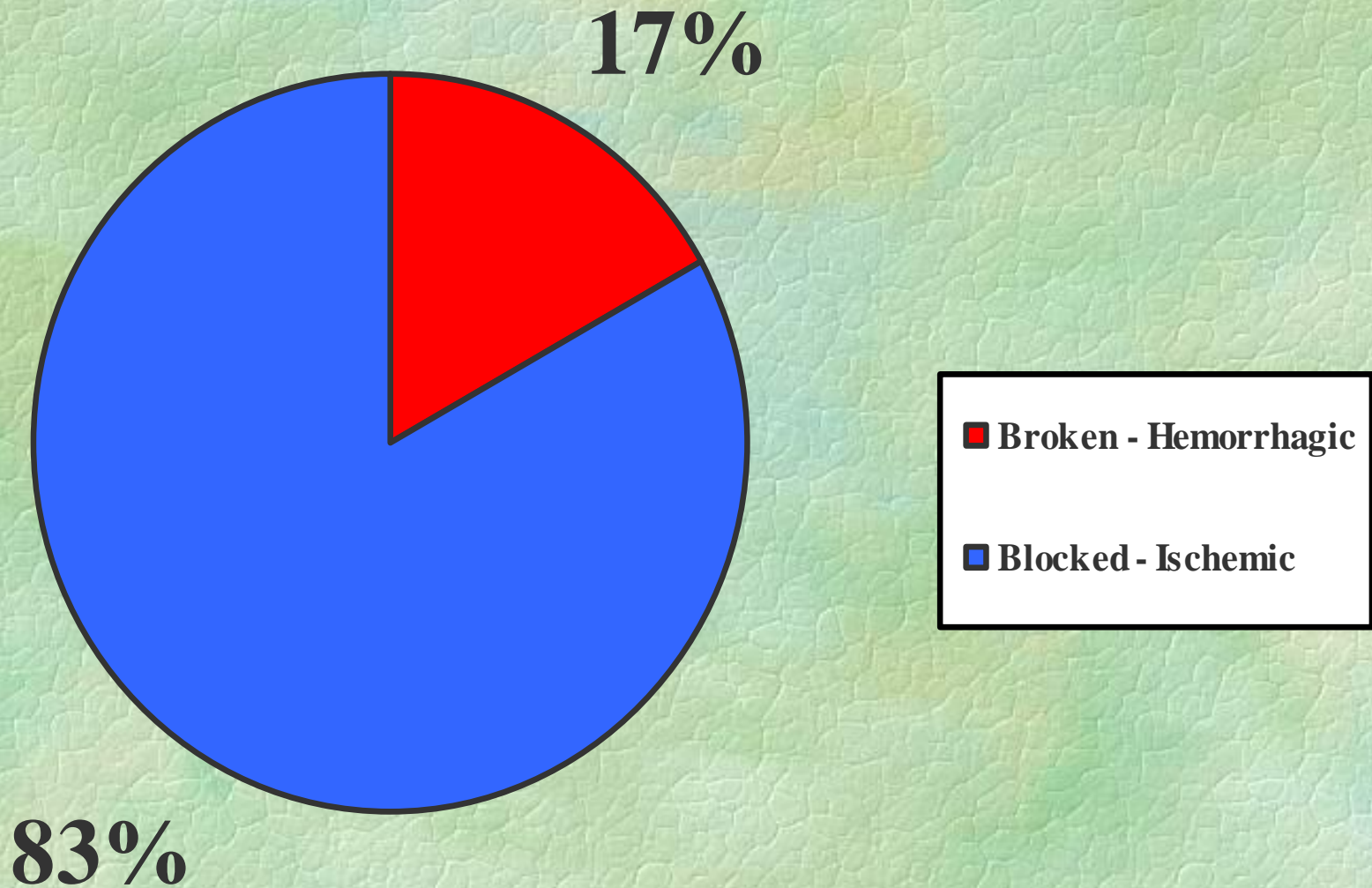


Broken
Hemorrhagic



Atrial Fibrillation

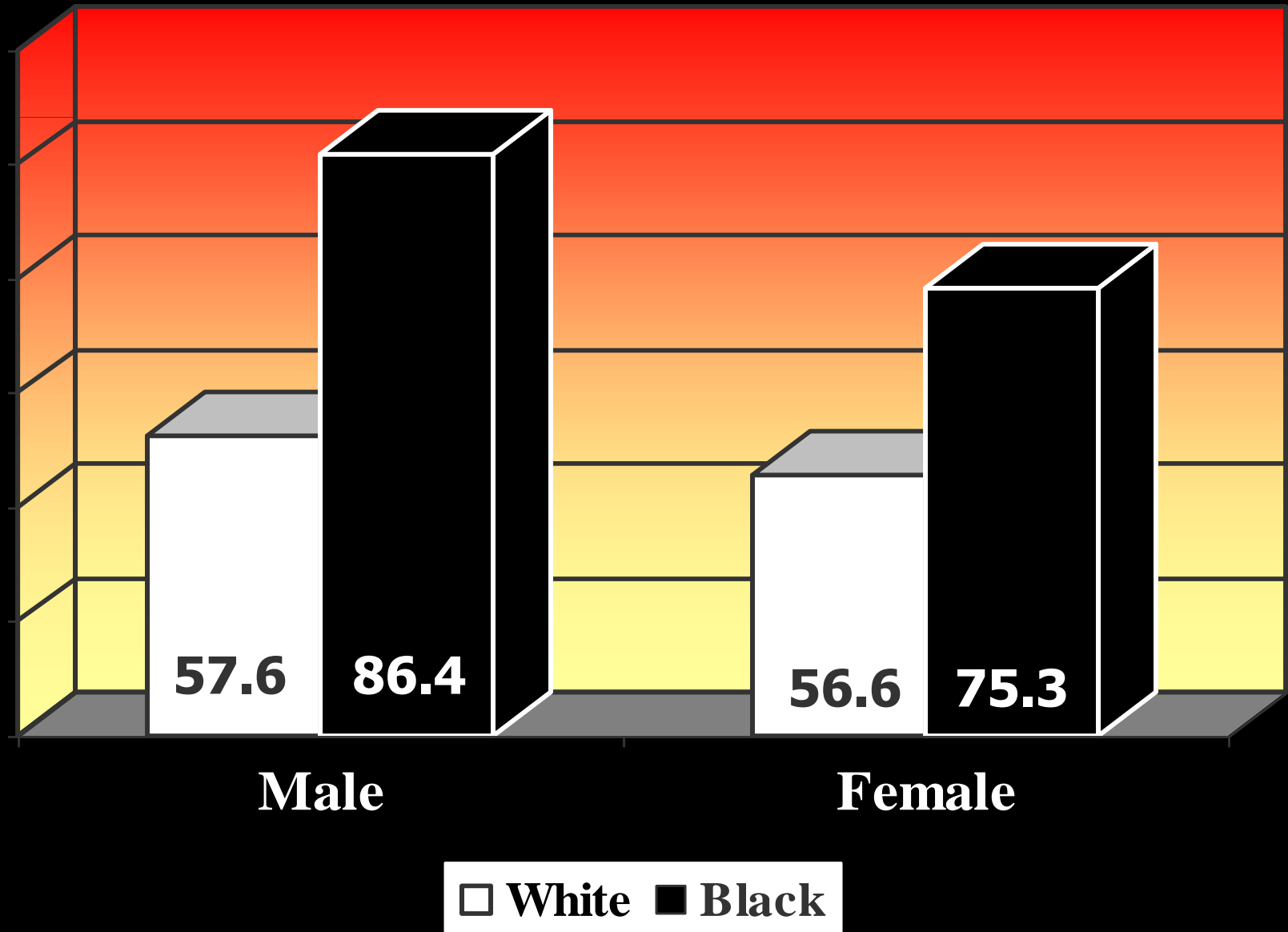
Stroke Type Distribution



Non-modifiable Risk Factors

- **Gender - Male/Female**
- **Race - African American**

Stroke Death Rates by Race/Gender

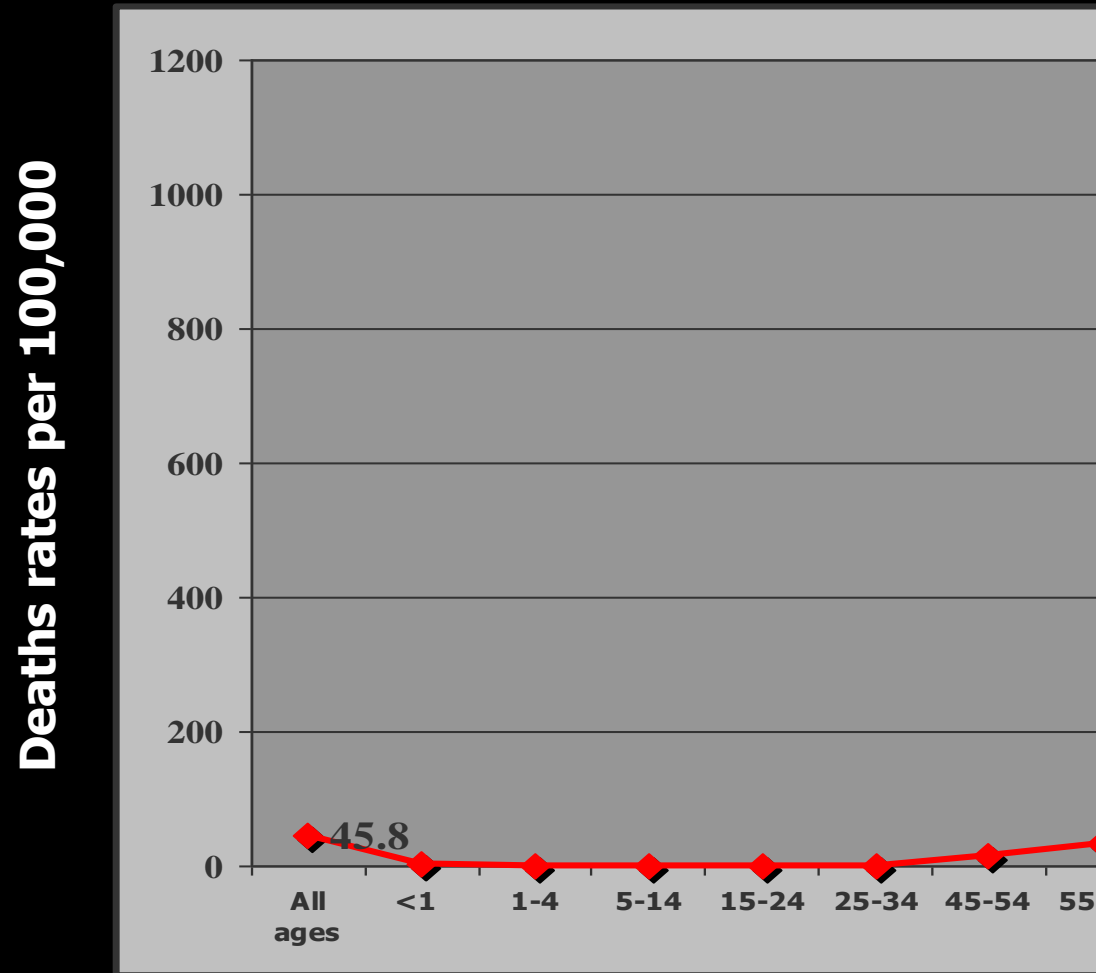


Non-modifiable Risk Factors

- **Gender**
- **Race**
- **Family history**
- **Previous stroke**
- **Transient Ischemic Attack**
- **Advanced age**

U.S. Stroke death rate by age

Center for Disease Control and Prevention 2006



Data from [Table 9_ Death rates by age and age-adjusted death rates for the 15 leading causes of death in 2006 United States, 1999-2006.htm](#)

Modifiable Risk Factors

High blood pressure

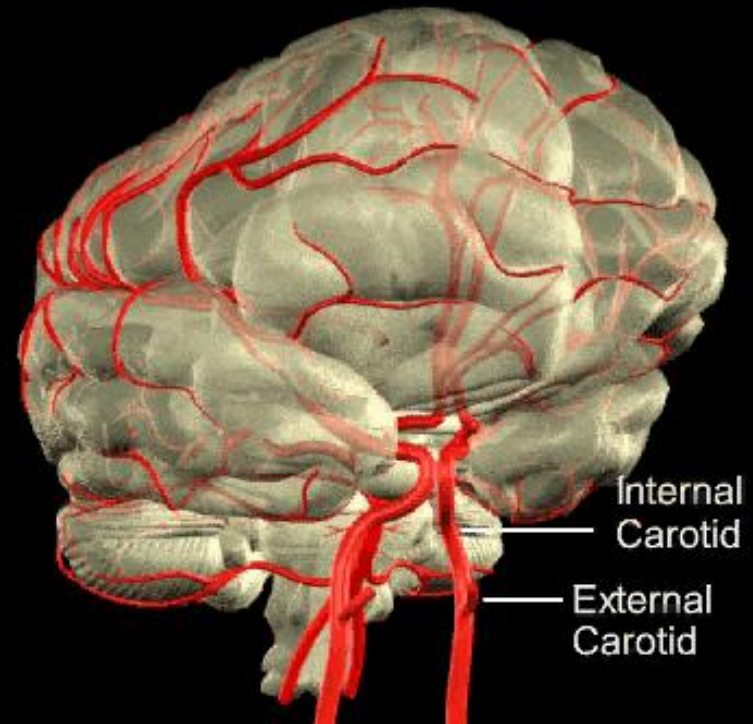
Heart disease

Irregular heart

Diabetes

Elevated cholesterol

Carotid narrowing



Modifiable Risk Factors

High blood pressure

Heart disease

Irregular heart

Diabetes

Elevated cholesterol

Carotid narrowing

Alcohol abuse

Tobacco use

Cocaine use

Sedentary lifestyle

Obesity

Sleep apnea

Common Signs and Symptoms

Speech problems

Sudden weakness/paralysis/sensory loss

Difficulty swallowing

Sudden change in vision

Incoordination on one side

Unexplained dizziness

Sudden, severe headache

Altered mental state

F.A.S.T. assessment tool

FACE

Ask the person to smile.

Does one side of the face droop?

ARMS

Ask the person to raise both arms.

Does one arm drift downward?

SPEECH

Ask the person to repeat a simple sentence.

Are the words slurred? Can he/she repeat the sentence correctly?

TIME

If the person shows any of these symptoms, time is important.

Call 911 or get to the hospital fast. Brain cells are dying.

B.E. F.A.S.T. assessment tool

FACE

Does one side of the face droop?

ARMS

Does one arm drift downward?

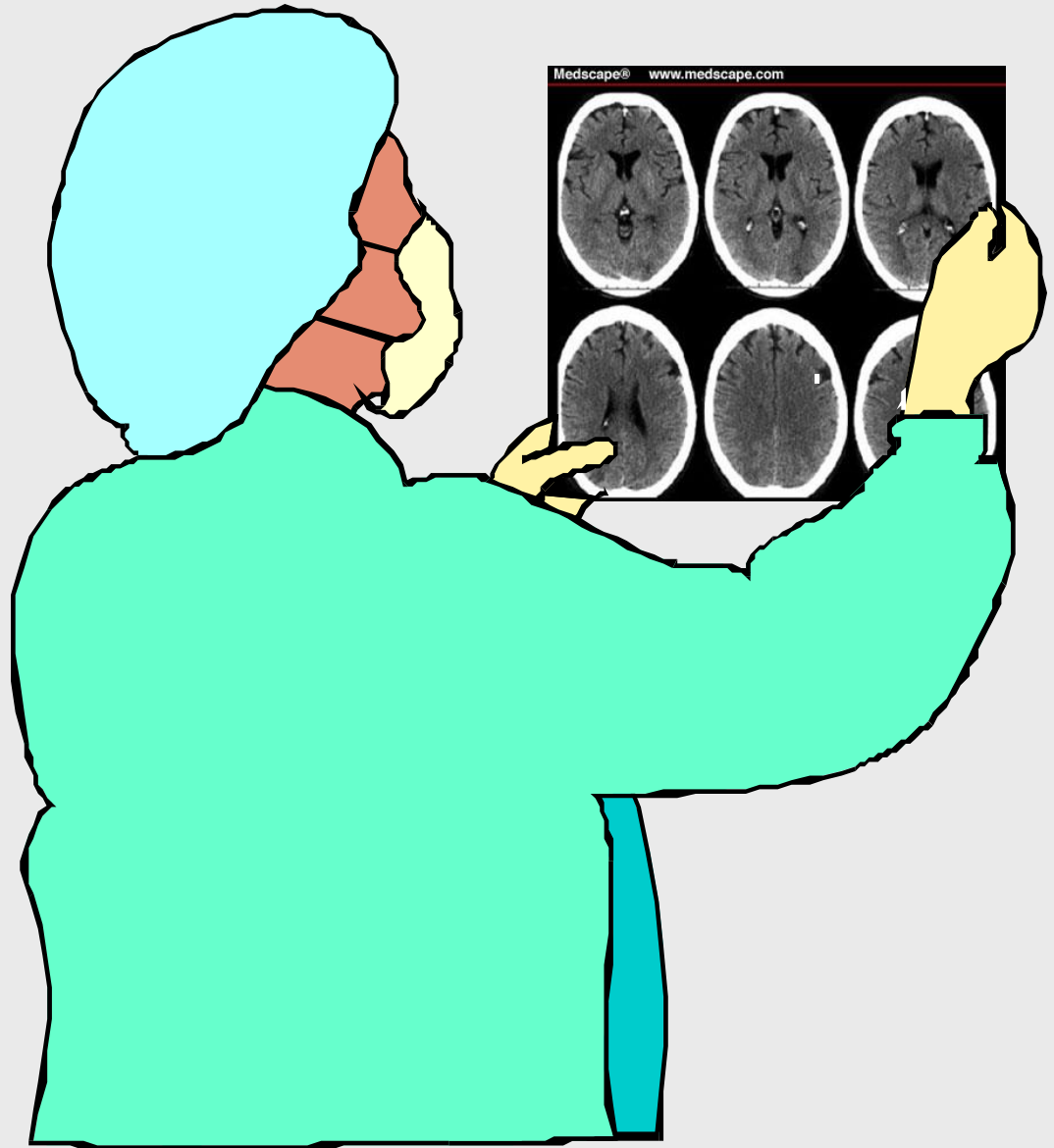
SPEECH

Are the words slurred? Can he/she repeat the sentence correctly?

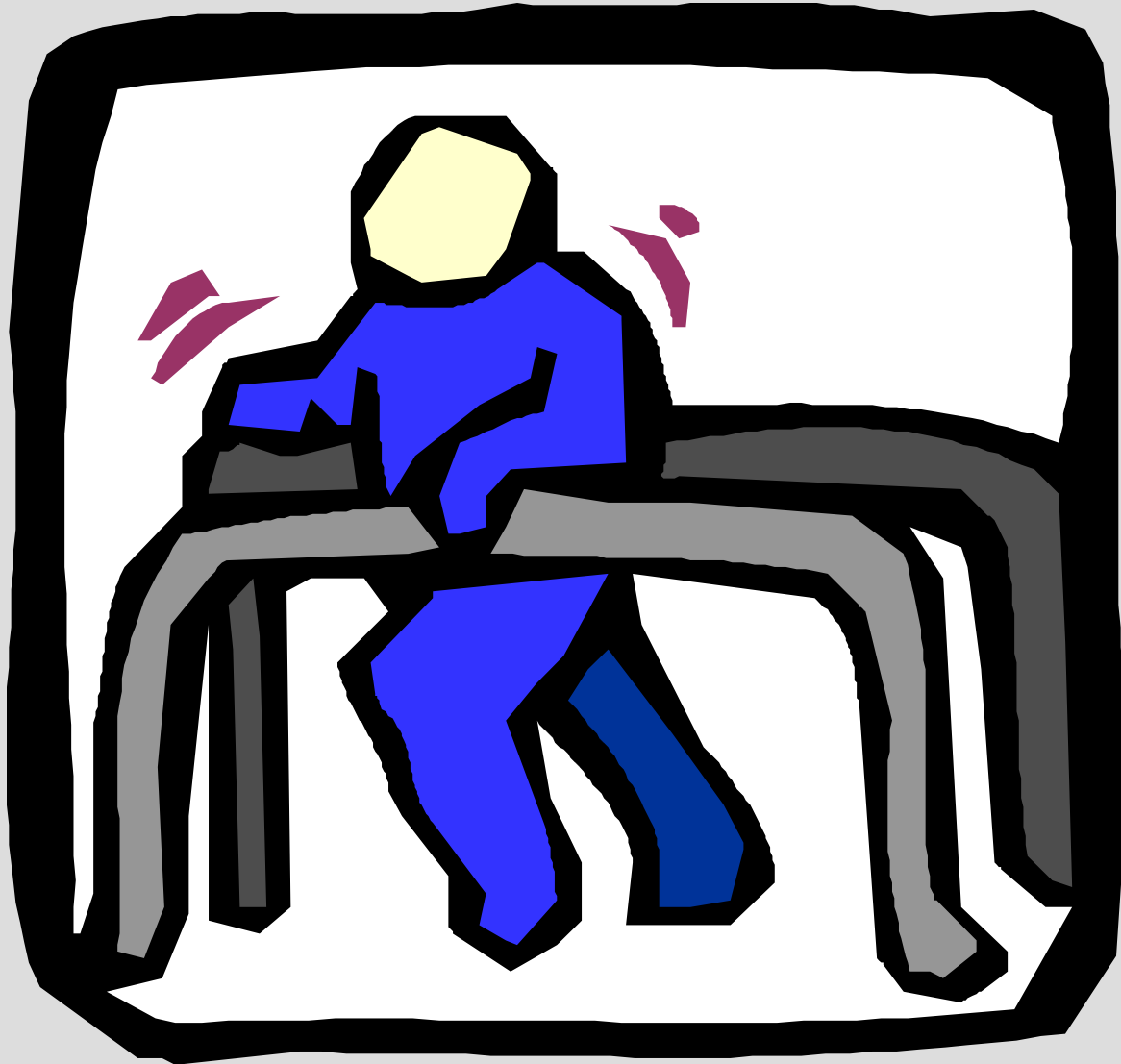
TIME

Call 911 or get to the hospital fast. Brain cells are dying.

**Up until
about
2005 the
focus had
been on
stroke
diagnosis**



post event rehabilitation





**and helping
patients
cope with
their
disability**

**Arresting
the stroke
progression**

Rapid Identification



[illegible]

NDC 50242-085-27

List No. : 8527

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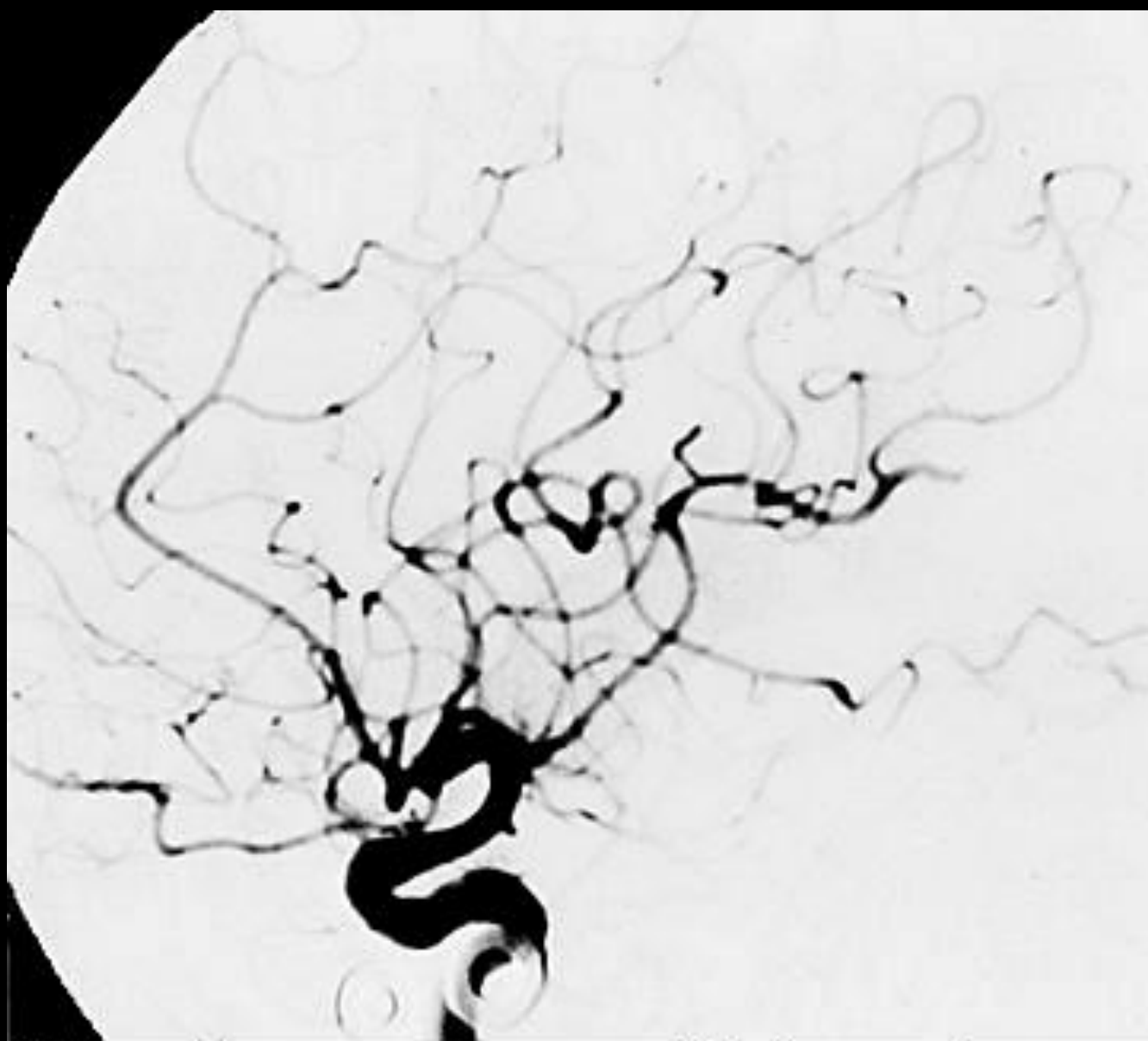
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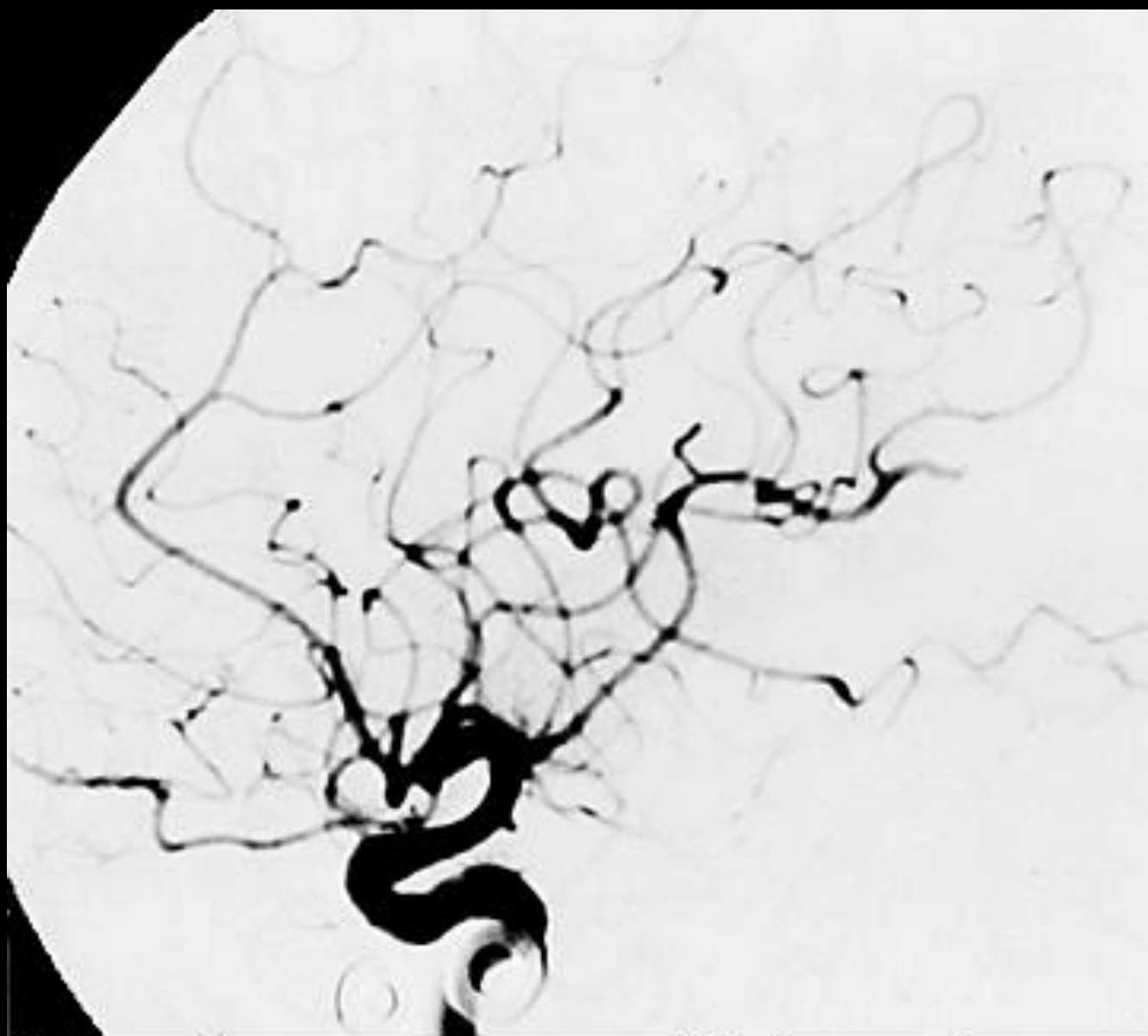
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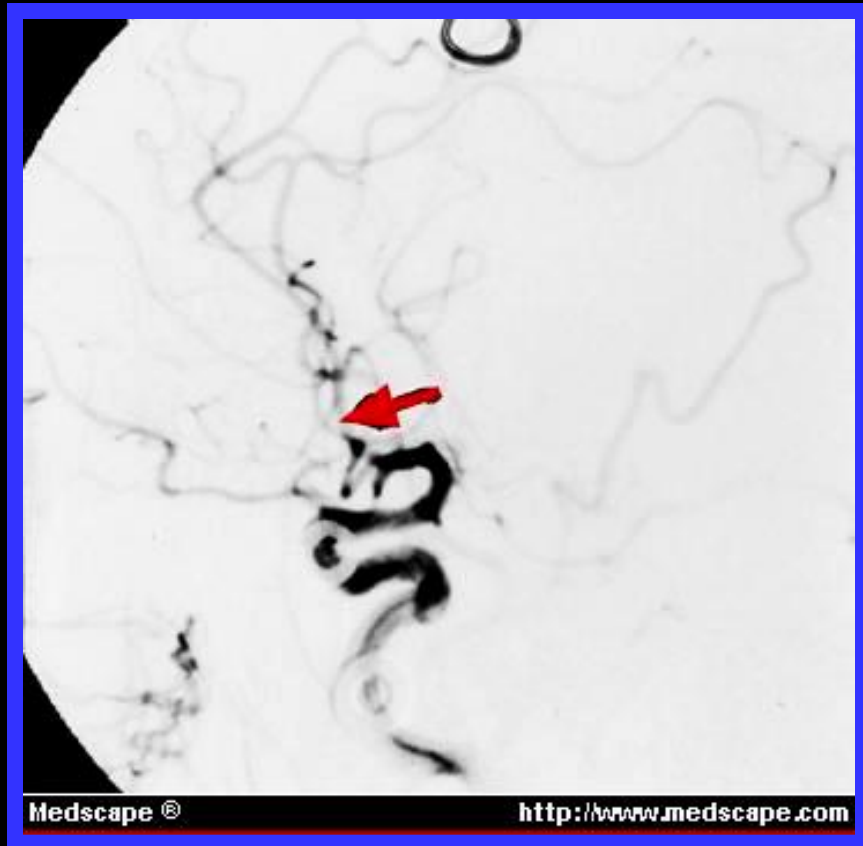
San Francisco, CA 94118

MOOREHEAD, D. L. 1984. *Phytoplankton of the Chesapeake Bay*. University of Maryland System, Center for Environmental and Estuarine Science, P. O. Box 38, Poolesville, Maryland 20854.



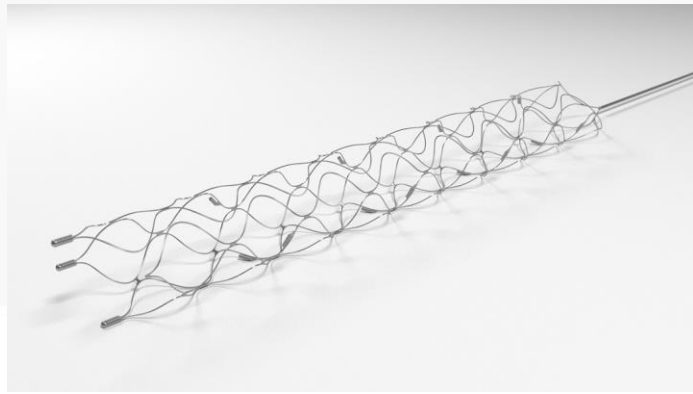


Before



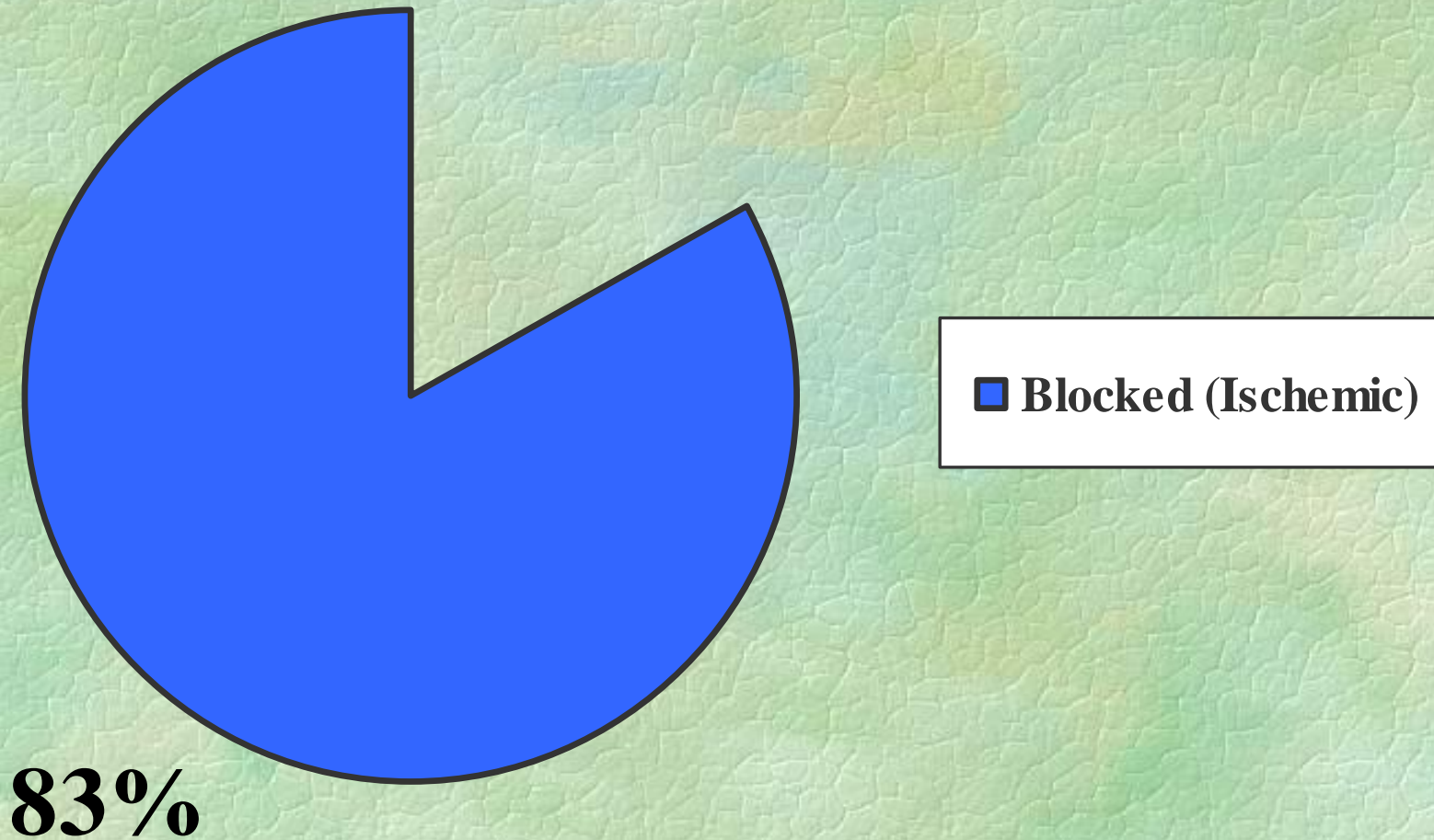
After

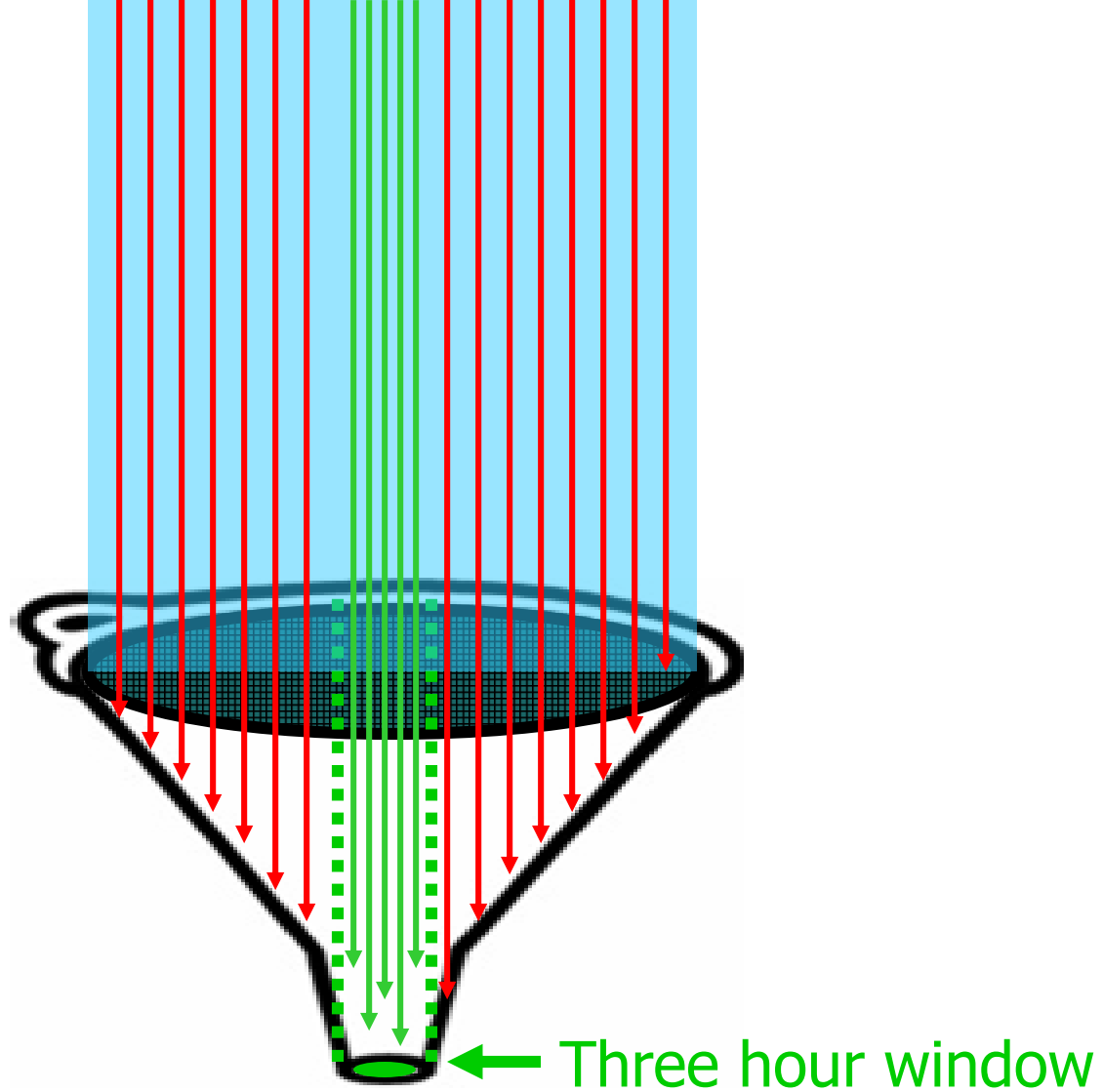






Stroke Type Distribution





Eligible patients

Delaying factors

- Inability to identify problem
- Event related impairment
- Attribution error
- Asleep at onset
- Denial
- Reluctance to “bother”
- “wait and see”
- Wrong number

Prepare for EMS arrival

- **Stay calm and follow 911 instructions**
- **If patient is unconscious; place on side**
- **Make your home visible/accessible**
- **Unlock door/turn lights on/secure pets**
- **Med list/doctors name/medical problems**
- **Provide history of the event**
- **Be available to answer questions**
- ***No aspirin**

The Ultimate Goal

- ❖ Improve quality of life
- ❖ Shorten hospitalization
- ❖ Speed rehabilitation
- ❖ Decrease nursing home admissions
- ❖ Control costs
- ❖ Return to productivity



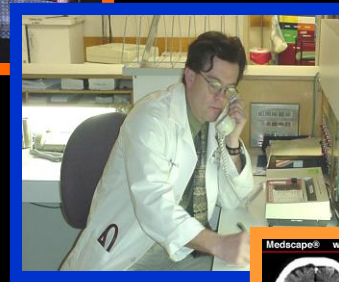
Detection



911 dispatch



Response



Communication

Diagnosis



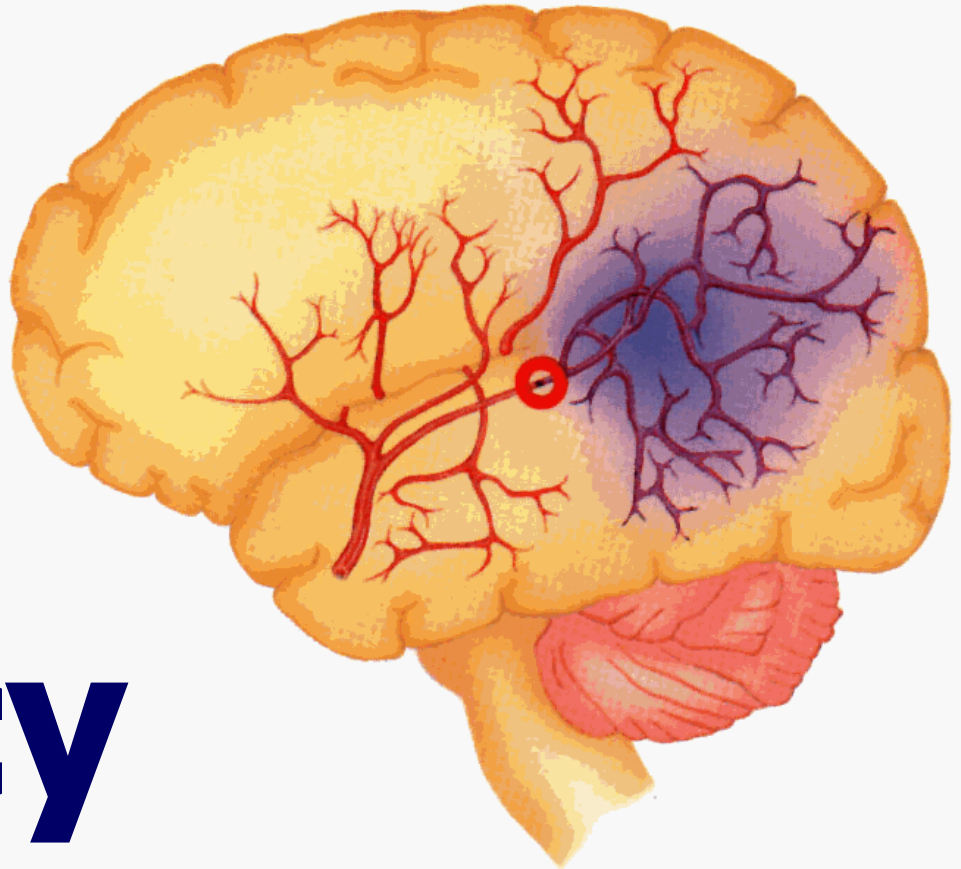
Treatment





**Success
requires a
system wide
approach**

and a consistent
sense
of
urgency

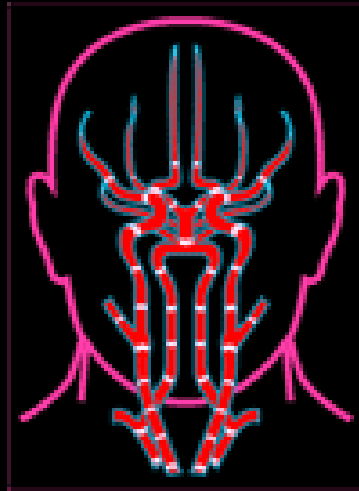


Remember!

You

are the

critical link



Thank you

Number of deaths for leading causes of death

- Heart disease: 702,880
- Cancer: 608,371
- Accidents (unintentional injuries): 227,039
- COVID-19: 186,552
- Stroke (cerebrovascular diseases): 165,393
- Chronic lower respiratory diseases:
147,382
- Alzheimer's disease: 120,122
- Diabetes: 101,209
- Nephritis, nephrotic syndrome, and
nephrosis: 57,937
- Chronic liver disease and cirrhosis: 54,803

Source: Mortality in the United States,
2022, data table for figure 4