



# Stroke Recognition and Prevention



Essentia Health Fargo Stroke Program



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Presenter has no conflicts of interest related to this presentation.

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No commercial support was received.

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# Stroke: Through Their Eyes

- **Stroke through the eyes of a witness**

[Recognize the signs of stroke FAST – Witness – YouTube](#)

Would you recognize a stroke? Watch how a stroke unfolds.

- **Stroke through the eyes of the patient**

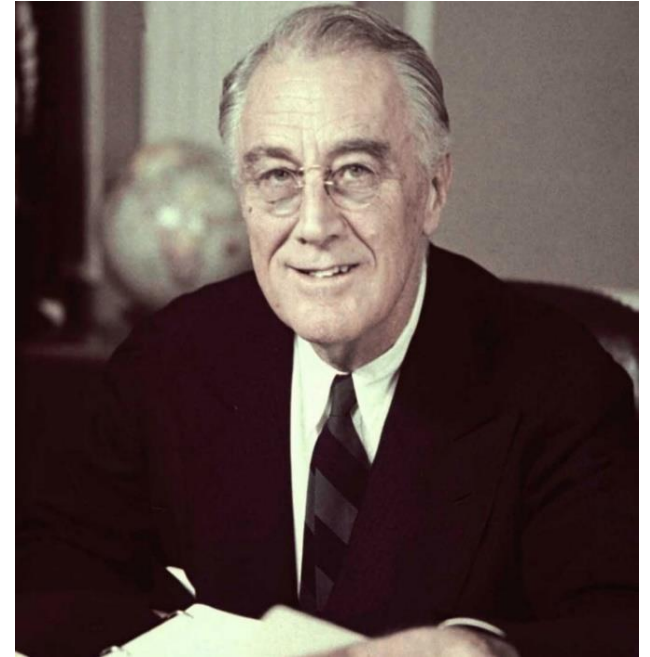
[Recognize The Signs of Stroke FAST - Victim – YouTube](#)

Would you know if you were having a stroke? Watch how a stroke unfolds through the eyes of someone who is experiencing one.

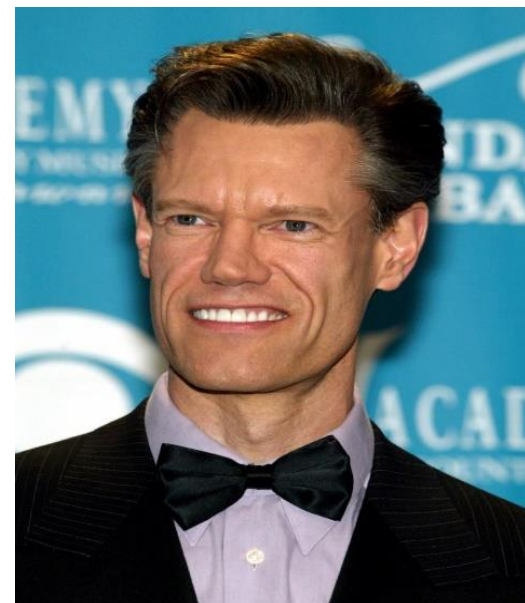
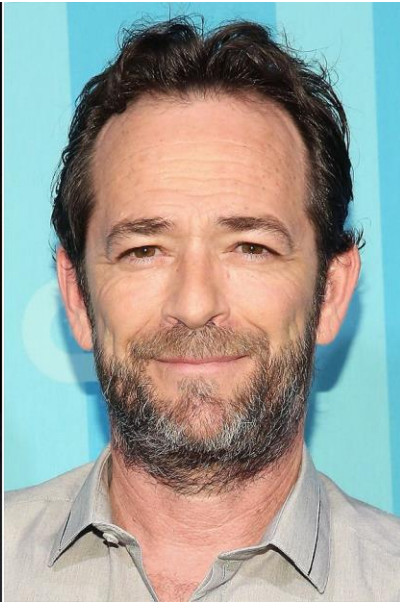
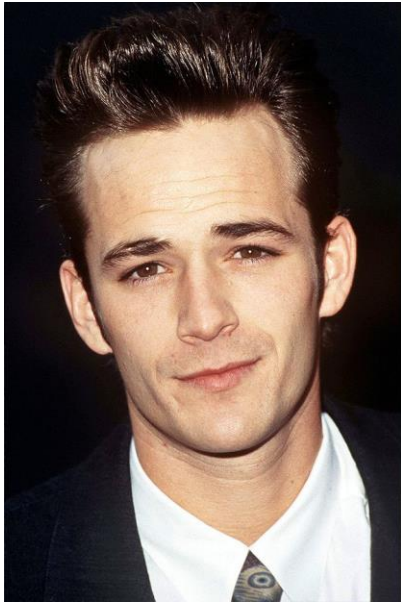


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# Famous People Who Have Had A Stroke



# Famous People Who Have Had A Stroke

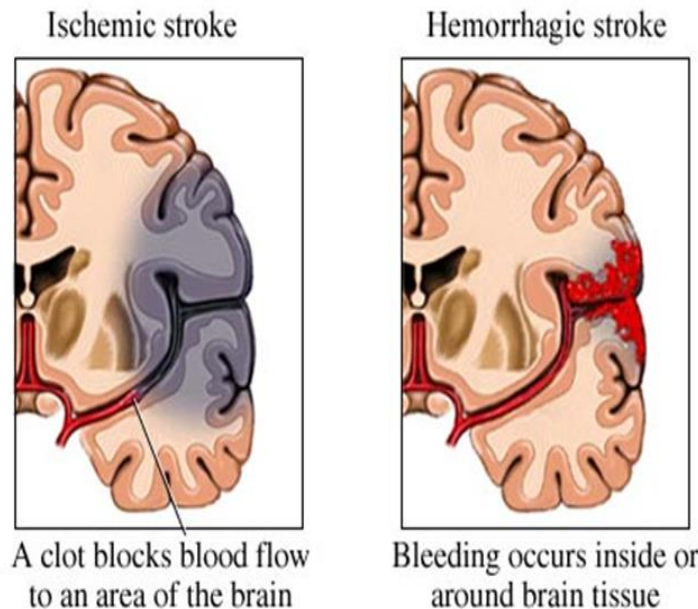


# Famous People Who Have Had A Stroke



# What is a Stroke?

- Stroke is an **acute** interruption of blood supply to a part of the brain. This can occur due to a blood clot or bleeding.
- \*When this happens, part of the brain cannot get the blood and oxygen it needs, so the area of the brain and cells die.
- Stroke is a '**brain attack**' and is a medical emergency.



(AHA, 2021)



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# Impact of Stroke

- Someone in the United States has a stroke every **40 seconds**.
- Every **4 minutes, someone dies of a stroke**.
- Every year, more than **795,000 people** in the United States have a stroke. About 610,000 of these are first or new strokes.
- Stroke is the #5 cause of death and one of the leading causes of long-term disability in the United States.
- Stroke risk increases with age, but strokes can—and do—occur at any age

\*Higher incidence of stroke in younger patients: COVID-19, drug use, and dissection.



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(CDC, 2021)

# Stroke Facts

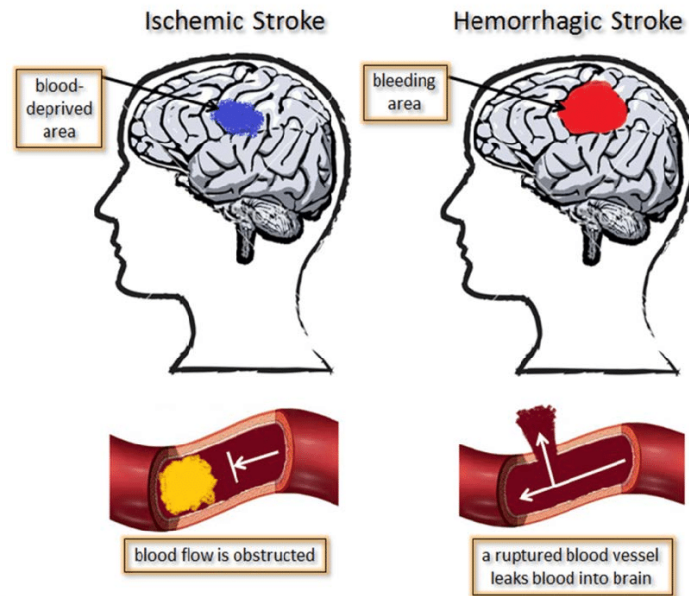
- 50% of the U.S. adult population has Hypertension. At age 50, the total life expectancy is 5 years shorter than someone without hypertension.
- Atrial Fibrillation-Raises risk up to 5x's.
- Smoking-Raises risk to 2-4x's higher than non-smokers.
- A history of stroke in a 1<sup>st</sup> degree relative increases the odds of stroke by about 12%.



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# Types of Strokes

- **Ischemic stroke**- occurs when a vessel supplying blood to the brain is obstructed.
- **Hemorrhagic stroke** occurs when a weakened blood vessel ruptures.
- **Transient Ischemic Attack (TIA)**- also called a 'warning stroke.' Occurs when there is a temporary blockage of blood flow to the brain. Since it doesn't cause permanent damage, it's often ignored.



(AHA, 2021)

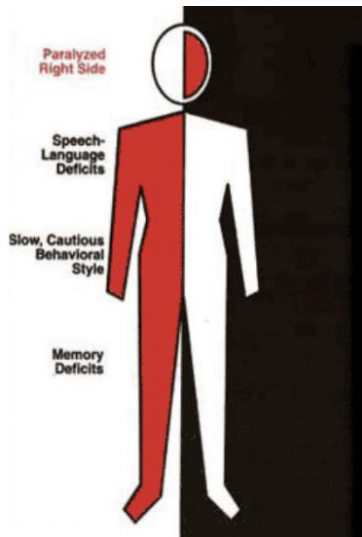


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# Stroke Symptoms

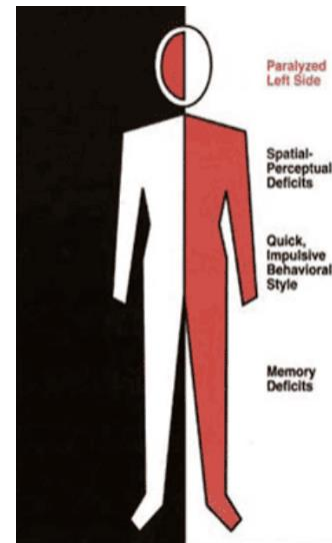
## Left Hemispheric Stroke

- Right Sided Deficits (weakness, numbness, or tingling)
- Problems with comprehension



## Right Hemispheric Stroke

- Left Sided Deficits (weakness, numbness, or tingling) speech-dysarthria
- Slurred Speech



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# Ischemic Stroke

- Occurs when a blood vessel that supplies the brain becomes blocked or "clogged" and impairs blood flow to part of the brain. The brain cells and tissues begin to die within minutes from lack of oxygen and nutrients.

**\*Accounts for 87% of all strokes.**

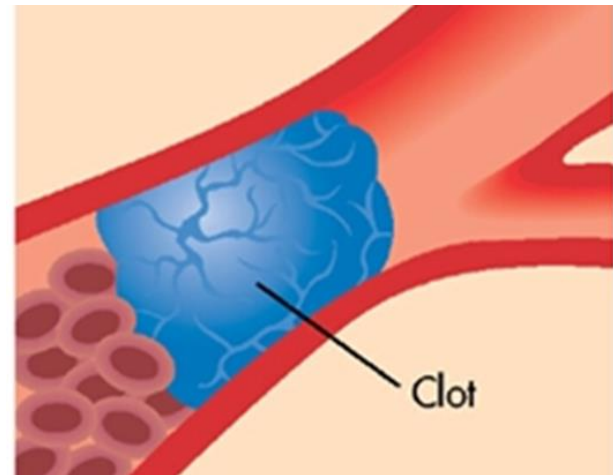
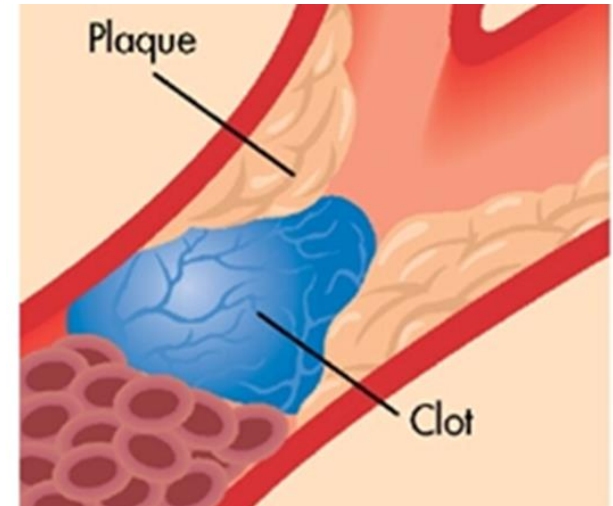
## Two types of Ischemic strokes:

**Thrombotic Stroke**-Caused by a thrombus (blood clot) that develops in the arteries supplying blood to the brain.

\*Usually seen in the elderly; especially those with high cholesterol, atherosclerosis or diabetes.

**Embolic Stroke**-Usually caused by a blood clot that forms elsewhere in the body (embolus) and travels through the bloodstream to the brain.

\*Often results from A-Fib, Heart Disease, Oral Contraceptives, and Surgery.



(John Hopkins Medicine, 2021.)



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# Ischemic Stroke Treatment

- **Clot Busting Medication**

- IV Alteplase

- \*Can be administered up to **4.5 hours** of Last Known Well.

- \*Patient must meet inclusion criteria.

- **Endovascular Intervention**

- Thrombectomy (Clot Retrieval)-for Large Vessel Occlusions

- \*Can be performed up to **24 hours** of Last Known Well.

- \*Depends on area of occlusion and extent of the infarct.



# Acute Stroke Case



Success!



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# Acute Stroke Case



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# Hemorrhagic Stroke

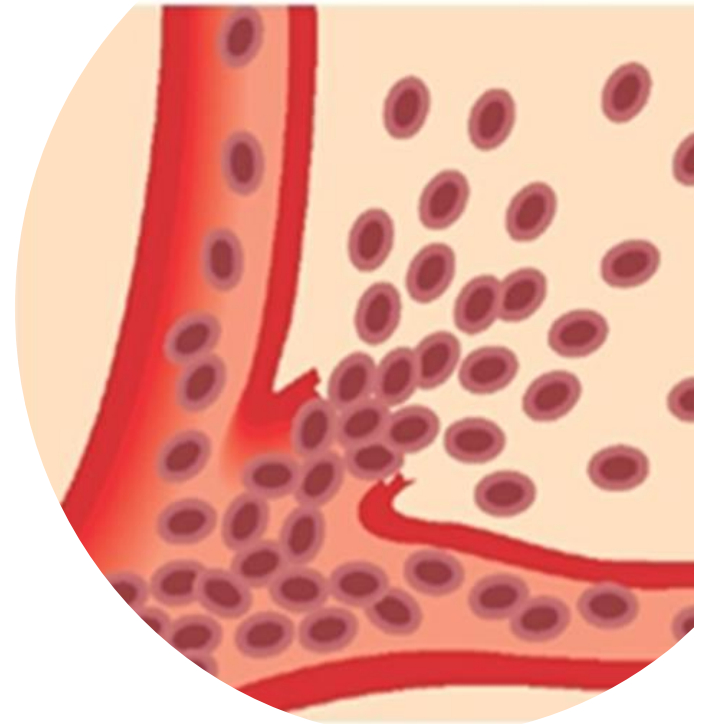
- Hemorrhagic strokes occur when a blood vessel that supplies the brain ruptures and bleeds. When an artery bleeds into the brain, brain cells and tissues do not get oxygen and nutrients.
- In addition, pressure builds up in surrounding tissues and irritation and swelling occur, which can lead to further brain damage.

**\*Accounts for 13% of all strokes.**

## Two types of Hemorrhagic strokes:

**Intracerebral hemorrhage**-Bleeding is from the blood vessels within the brain. Bleeding occurs suddenly and rapidly.

**Subarachnoid hemorrhage**-Results when bleeding occurs between the brain and the membrane that covers the brain (meninges) in the subarachnoid space.

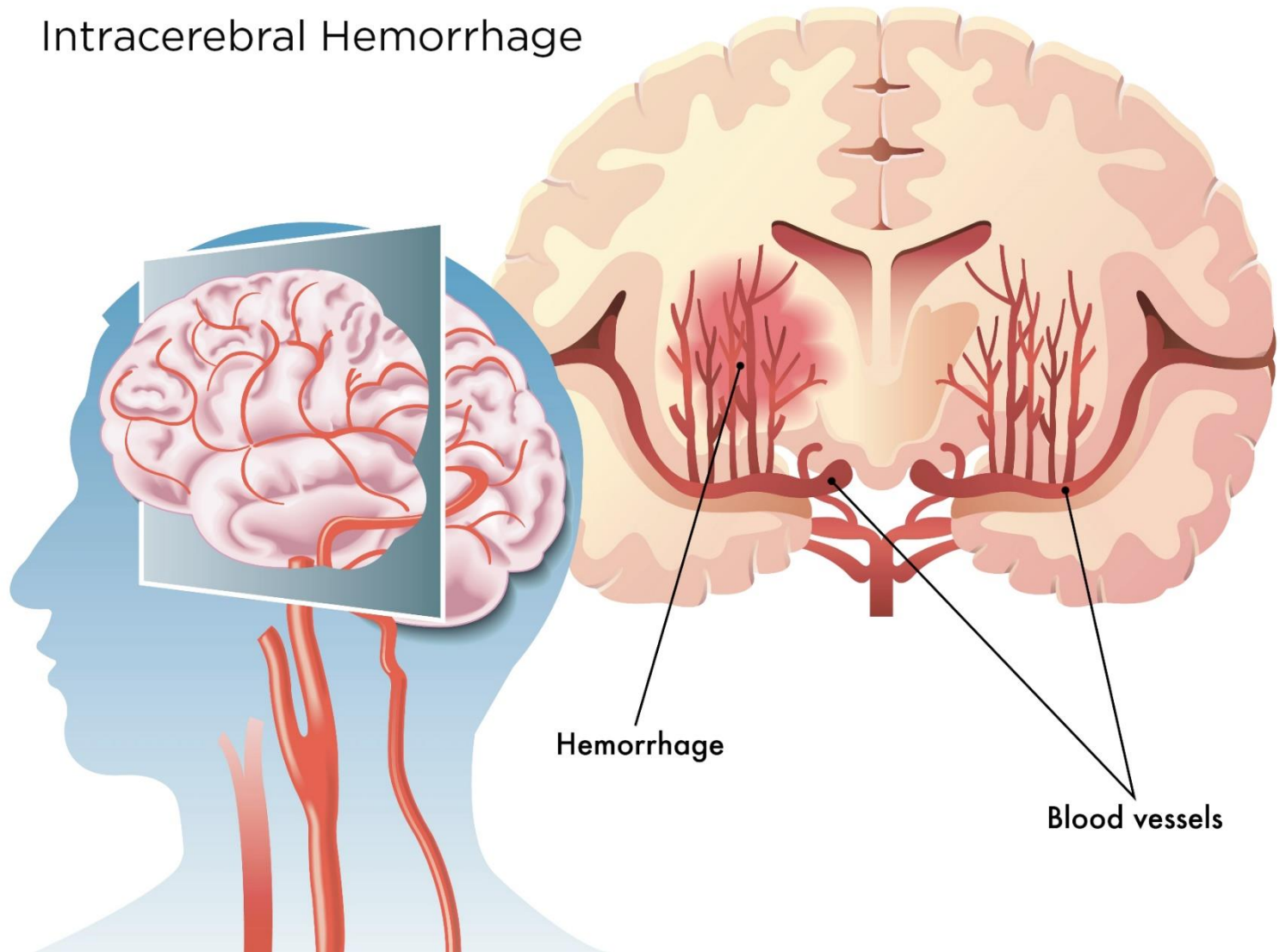


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# Intracerebral Hemorrhage (ICH)

Intracerebral Hemorrhage



# Intracerebral Hemorrhage (ICH)

- Primary cause is Hypertension.
- Secondary causes are coagulopathy, drug use, hemorrhagic conversion, brain tumors, and vasculitis

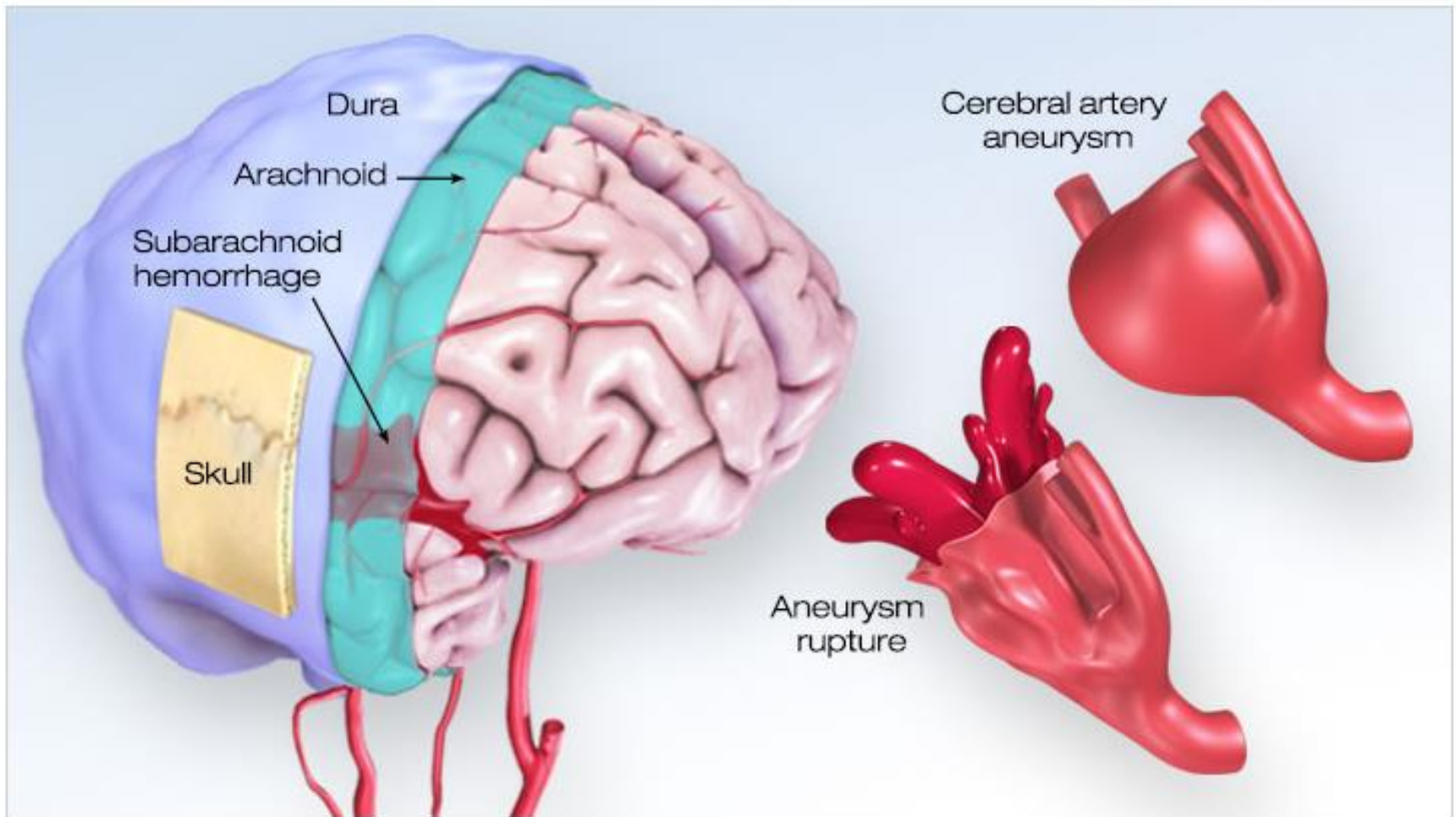
## Symptoms:

- Onset of focal neuro deficits, severe headache, nausea and vomiting, decreased level of consciousness and elevated BP.



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# Subarachnoid Hemorrhage (SAH)



<https://watchlearnlive.heart.org/index.php?moduleSelect=hemstr>



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# Subarachnoid Hemorrhage (SAH)

- Primary cause is ruptured aneurysm or AVM.

-Aneurysm- a weakened, ballooned area on an artery wall and has a risk for rupturing.

-AVM- is a congenital disorder that consists of a disorderly tangled web of arteries and veins. The cause of AVM is unknown, but it is sometimes genetic or part of certain syndromes.

- Risk factors include: Hypertension, smoking, cocaine abuse, alcohol abuse, race, and family history.

## Symptoms:

- “Thunderclap Headache”/“Worst headache of my life”
- Change in level of consciousness, nausea and vomiting, blurred vision



- Overall mortality is 40-50%



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# Hemorrhagic Stroke Treatment

- **Medical Intervention**

- Reversal of anticoagulation
- Blood pressure reduction

- **Surgical Intervention**

- Craniectomy and clot evacuation
- Aneurysm clipping
- External ventricular drain

- **Endovascular Intervention**

- Aneurysm coiling
- Flow diverter placement
- Vascular abnormality glue embolization



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# Transient Ischemic Attack (TIA) 'Warning Stroke'

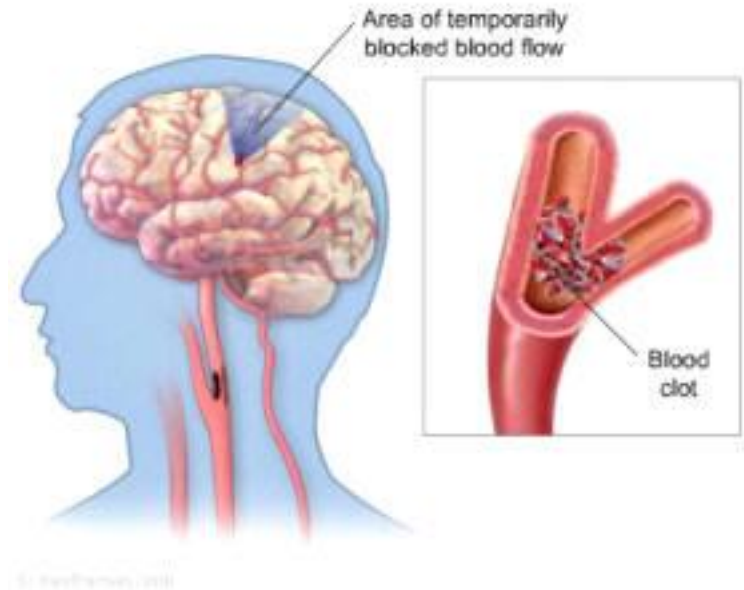
**TIA**-temporary period of neurological symptoms similar to those of a stroke, but do not cause permanent damage.

**Transient:** Temporary

**Ischemic:** Cell/Tissue Injury

**Attack:** Sudden

- About 1 in 3 people who have a TIA will eventually have a stroke (usually within a year.)
- A TIA can serve as both a warning sign of a future stroke, and an opportunity to prevent it.



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# How To Recognize A Stroke

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**B**– Balance (Is their balance or coordination suddenly gone?)

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**E**– Eyes (Sudden Vision Change?)

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**F**– Facial Droop (Does Face Look Uneven? Did this happen suddenly?)

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**A**– Arm Weakness (Does their arm drift down? Did they develop sudden weakness? Sudden numbness and tingling?)

---

**S**– Speech Difficulty (Does Their Speech Sound Strange? Did this happen suddenly?)

---

**T**– Time to Call 9-1-1 (Every second brain cells die.)



## BALANCE

Is their balance or coordination suddenly gone?



## EYES

Did their vision suddenly change?



## FACE

Does their face look uneven?



## ARM

Does their arm drift down?



## SPEECH

Does their speech sound strange?



## TIME

Every second brain cells die, call 911.



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# B.E.F.A.S.T



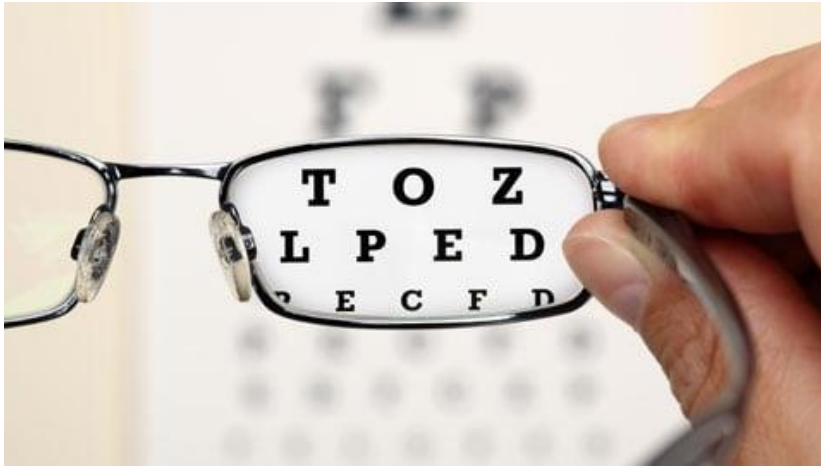
## Balance

- Sudden loss of balance?
- Sudden loss of coordination.



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# B.E.F.A.S.T



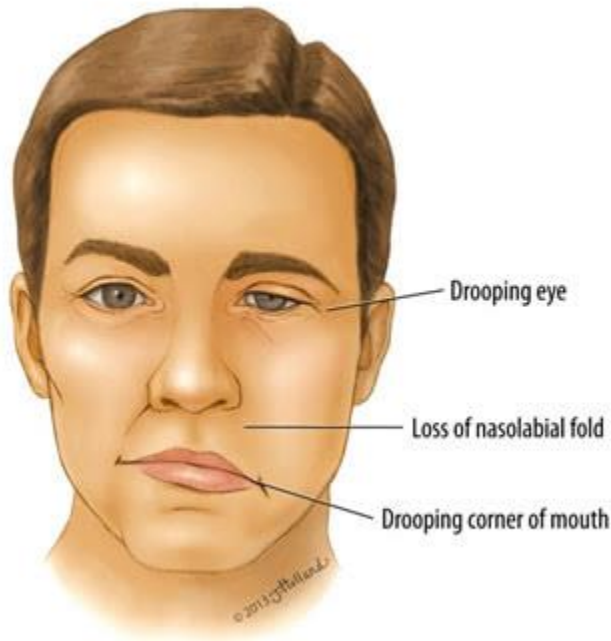
## Eyes

- Sudden loss of vision?
- Sudden blurry or double vision?



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# B.E.F.A.S.T



## Face

- Does one side of the face droop?
- Numbness on one side of the face?



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# B.E.F.A.S.T



## Arm

- Does arm feel weak?
- Does one arm drift down when raised?



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# B.E.F.A.S.T



## Speech

- Does the person have difficulty speaking?
- Does their speech sound strange?



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# B.E.F.A.S.T



## Time

- If you or someone else has any **one** of these signs-it's time to call 9-1-1 immediately!
- Every second, brain cells die.



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# How To Prevent A Stroke: Know Your Risk Factors

## Uncontrollable

- Age

\*After the age of 55, stroke risk doubles every 10 years.

- Race

\*Higher for African Americans (HNF1A gene)

- Gender

\*Higher in women

- Family History

- Personal History

\*TIA or Previous Stroke

## Controllable

- Atrial Fibrillation
- Carotid Artery Disease (Carotid Stenosis)
- High Blood Pressure
- High Cholesterol Levels
- Diabetes
- Sleep Apnea
- Smoking (including second-hand)
- Drug and Alcohol Use
- Physical Inactivity
- Diet
- Obesity



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# Atrial Fibrillation (A-Fib)



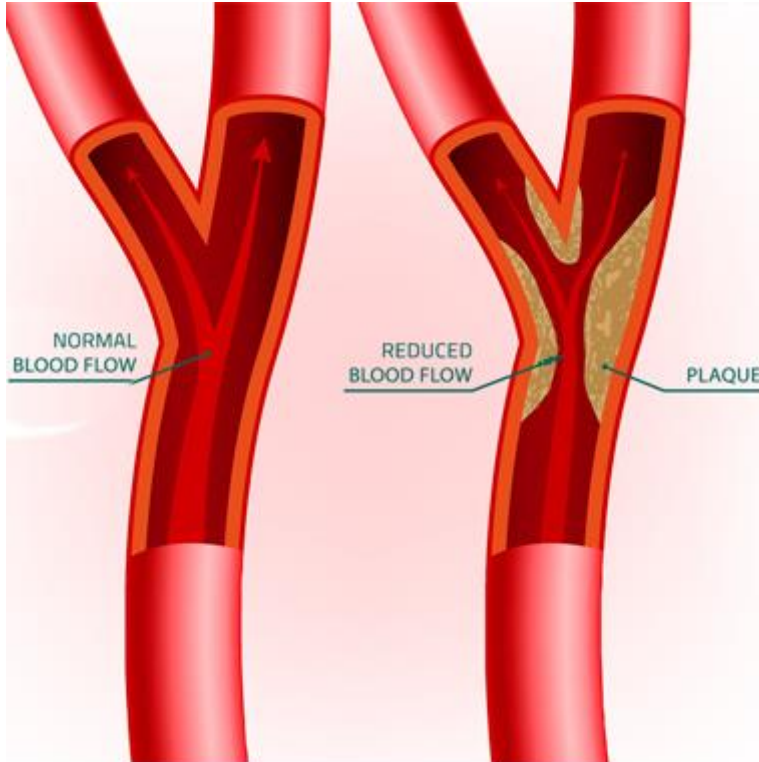
- Find out if you have A-Fib (irregular heartbeat.)

† \*If you do, talk to your doctor about how you can control it.



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# Carotid Artery Disease (Carotid Stenosis)



- **Lifestyle changes to slow the progression of atherosclerosis.**
  - Recommendations from your doctor may include quitting smoking, losing weight, eating healthy foods, reducing salt intake and exercising regularly.
- **Medication to control blood pressure or lower cholesterol.**
  - Your doctor may recommend taking a daily aspirin or other blood-thinning medication to prevent blood clots.

\*If blockage is severe, your doctor may recommend removing the blockage from the artery.

**(Carotid Endarterectomy, Carotid Angioplasty, or Carotid Stenting)**



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# Hypertension (High Blood Pressure)

- Keep track and know your numbers.
- \*If your blood pressure consistently runs high, talk to your doctor about ways to lower it.

## Normal:

120/80 (or lower)

## Pre-Hypertension:

120-139/80-89

## Hypertension:

140/90 (or higher)



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# Hyperlipidemia (High Cholesterol)

- Know your numbers.  
If levels are high, talk to your doctor about ways to lower it.



- **Way To Improve Your Numbers:**

- Eating a well-balanced diet with fruits, vegetables, whole grains, and lean meats.
- Regular exercise
- Cholesterol-Lowering Medications

- Lipitor
- Crestor
- Zocor

## **Total Cholesterol:**

Should be below **200.**

## **HDL:** 'Good Cholesterol'

Should be around **50.**

## **LDL:** 'Bad Cholesterol'

Should be less than **100.**



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# Diabetes (Type 1 & Type 2)

- Follow your doctor's advice and get your blood sugar levels under control.
- Eat healthy meals, exercise, and take medications as prescribed.



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# Smoking, Tobacco Use, and Alcohol

- If you smoke or use tobacco products-**STOP!**

\*Secondhand smoke also puts an individual at increased risk.

- If you drink alcohol, do in moderation.

\*Heavy drinking increases your risk for a stroke.

## What happens after you stop smoking:

**In 20 minutes:** Heart rate decreases

**In 12 hours:** Carbon monoxide levels return to normal.

**In 2 weeks-3 months:** Risk of heart attack decreases; lung function improves

**In 1 year:** Heart disease is reduced

**In 5 years:** Stroke risk is reduced

**In 10 years:** Cancer risk is reduced

**In 15 years:** Heart disease risk is similar to a non-smoker



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# Exercise/Physical Activity

- Include exercise in your daily routine.
  - Get up and move!
- \*Even a little bit of exercise can improve your health and reduce your risk for a stroke.



- Biking
- Walking
- Gardening
- Workout Videos



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# Diet (Lower Salt, Lower Fat)

- Cutting down on salt and fat may lower blood pressure and cholesterol levels, which can lower your risk for a stroke.

\*Read nutrition labels.

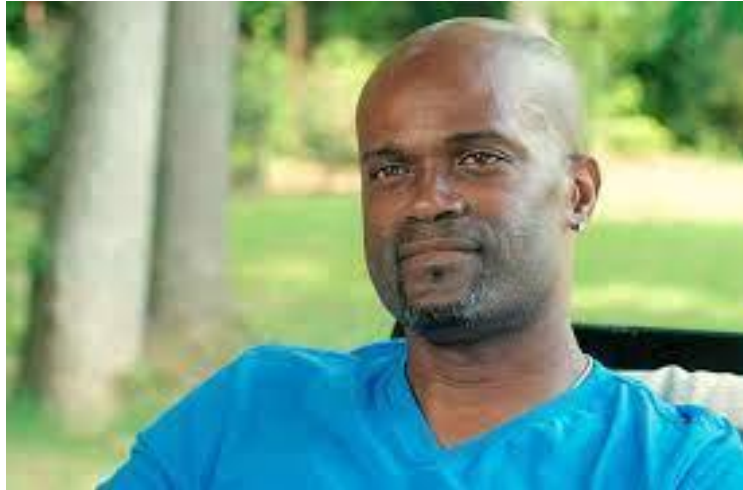
\*Avoid foods high in saturated fat, trans fat, and hydrogenated oil.



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# Stroke Survivor Story



(CDC, 2019.)

Click below link to watch video.

[Stroke Survivor Stories: Prince Quire | cdc.gov](https://www.cdc.gov/stroke/survivorstories/prince-quire)



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# Questions?



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# Thank You For Your Time!

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- American Heart Association (AHA) (2021). What is a stroke? Retrieved October 12<sup>th</sup>, 2021 from: <https://www.stroke.org/en/about-stroke>
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