

# Time is Brain

## Stroke Identification, Treatment, and Prevention

MEDICINE *of* THE HIGHEST ORDER



UNIVERSITY *of*  
**ROCHESTER**  
MEDICAL CENTER



## Presentation Goals

1. Learn the causes of stroke.
2. Demonstrate why stroke matters/ how it affects you.
3. Show the critical role of time in stroke treatment.
4. Teach you how to recognize and respond to the signs of stroke.
5. Share ways you can prevent stroke from happening.



# Professional Background

- Critical Care Nurse on Mobile Stroke Unit since its inception in 2018
  - Treated and Transported over 700 patients experiencing a stroke
- Neuro-interventional Operating Room and Neuro-medicine ICU RN
  - Participated in caring for many patient's treated for significant strokes





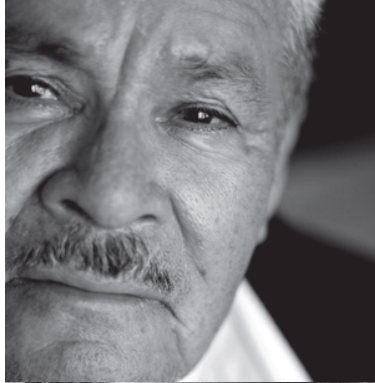
**KNOW  
STROKE**

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KNOW THE SIGNS. ACT IN TIME.

*Stroke Strikes Fast. You Should Too. Call  
911.*

# Strokes occur when blood supply to the brain is stopped



Brain cells need oxygen and nutrient rich blood to survive. A stroke occurs when blood flow carrying these materials to the brain is interrupted causing brain cells to die.

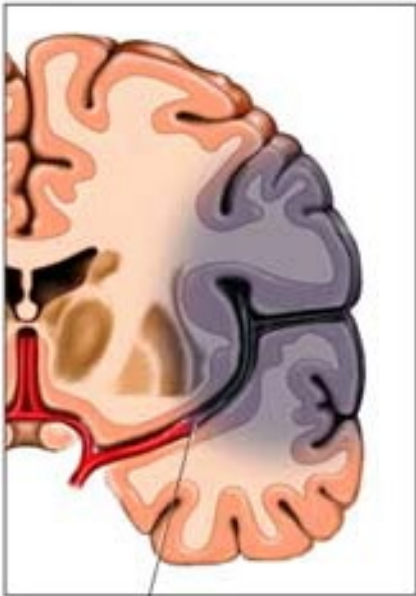
Without oxygen, brain cells start to die after just 3-4 minutes.

## 2 MAJOR KINDS OF STROKE: CLOTS AND BLEEDS

*What prevents blood flow to the brain?*



Ischemic Stroke



Clot stops blood supply to an area of the brain

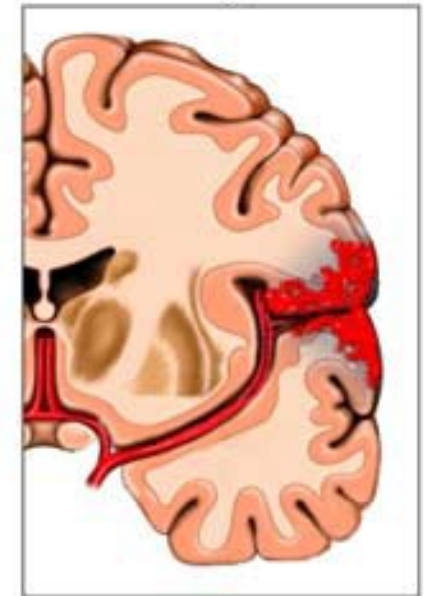
### **Ischemic Stroke (CLOTS)**

- Caused by a blood clot that blocks or plugs a blood vessel in the brain.
- About 80% of all strokes are ischemic.

### **Hemorrhagic Stroke (BLEEDS)**

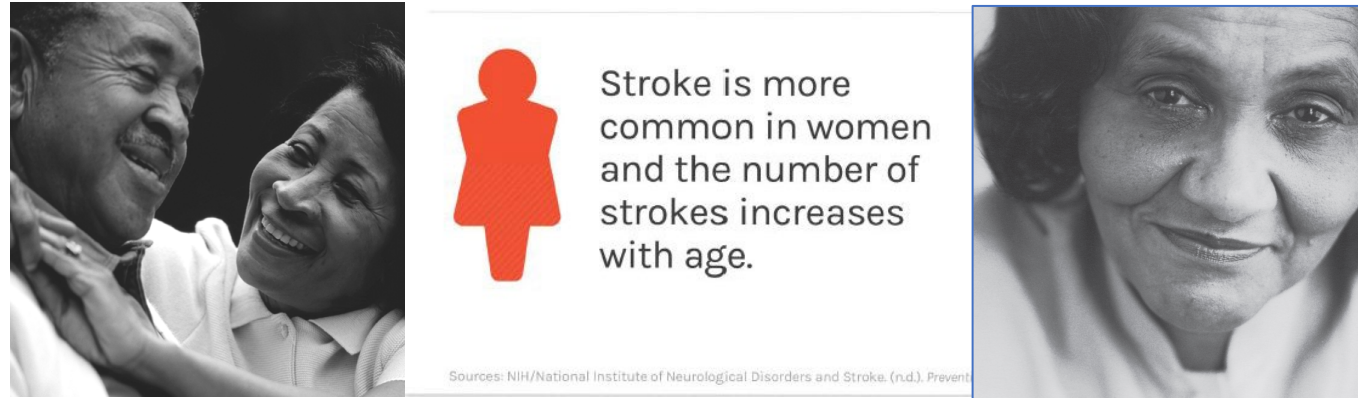
- Caused by a blood vessel in the brain that breaks and bleeds into the brain.
- About 20% of all strokes are hemorrhagic.

Hemorrhagic Stroke



Hemorrhage/blood leaks into brain tissue

# Stroke matters: Stroke **can strike anyone**



- 1 in 5 women, and 1 in 6 men will have a stroke in their lifetime.
- Stroke risk increases by age, but strokes can happen at any age.
- While stroke risk increases as you age, a 2009 study found that 34% of people *hospitalized* for stroke were < 65 years old.

# Stroke matters: Some are at greater risk than others.

## African Americans

African Americans have the highest rate of death due to stroke. Stroke risk is nearly **2 times higher** for African-Americans as for Caucasians. Strokes tend to be *more severe and disabling*.

## Hispanics

Hispanics have seen **an increase in stroke death rates** since 2009. As of 2016, stroke was 4<sup>th</sup> leading cause of death for Hispanic men; 3<sup>rd</sup> leading cause of death for Hispanic women.

## Age 55+

Close to 75% of all strokes happen in people over age 65. The **risk of having a stroke more than doubles** each decade after age 55.

Stroke can strike anyone.

**African Americans, Hispanics** & 55+ are most at risk.

Stroke kills twice as many  
**2x** African Americans as Caucasians, with  
more severe & disabling effects.

Sources: NIH/National Institute of Neurological Disorders and Stroke. (n.d.). Preventing Stroke. Retrieved from [www.ninds.nih.gov](http://www.ninds.nih.gov). • American Stroke Association. (n.d.). Conditions: Understanding Stroke Risk. Retrieved from [www.strokeassociation.org](http://www.strokeassociation.org).



# Stroke Matters: leading cause of death

*Every year, close to 800,000 people in U.S. have a stroke.  
- about 3,000 in Monroe County*

- Stroke kills 150,000 Americans each year = 1 out of every 19 deaths.
- On average, 1 American dies of stroke every 3.5 minutes.
- 5<sup>th</sup> leading cause of death in U.S.
- 4<sup>th</sup> leading cause of death in NYS: 6000 die each year.
- 3<sup>rd</sup> leading cause of death in Monroe County: > 300 die each year.
- Number of strokes expected to rise in coming years.



# Stroke Matters: leading cause of disability

- Stroke is leading cause of serious long-term disability, and of placement in nursing homes.
- Stroke reduces mobility in more than half of stroke survivors age 65 and over.
- Stroke costs money: US an estimated \$34 billion each year, including cost of health care services, medications to treat stroke, and missed work days.




# STROKE MATTERS: COMMON **DISABILITIES** CAUSED BY STROKE



- Stroke is a disease of the brain, but it can affect the entire body.
- Effects of stroke range from mild to severe and can include:
  - Paralysis
  - Problems with thinking
  - Problems with speaking
  - Emotional problems
  - Pain or numbness

## Time Matters: **Minutes count** in stroke

 Brain Cells Lost	Number of Years the Brain Ages	
Per Stroke	1.2 billion	36 yrs
Per Hour	120 million	3.6 yrs
Per Minute	1.9 million	3.1 weeks
Per Second	32,000	8.7 hrs

*Stroke is a medical emergency . . .*

Every minute counts when someone is having a stroke. The longer blood flow is cut off to the brain, the greater the damage. Immediate treatment can save lives and enhance chances for successful recovery.



*Don't wait! Call 911.*

## Time Matters: **Minutes count** in stroke

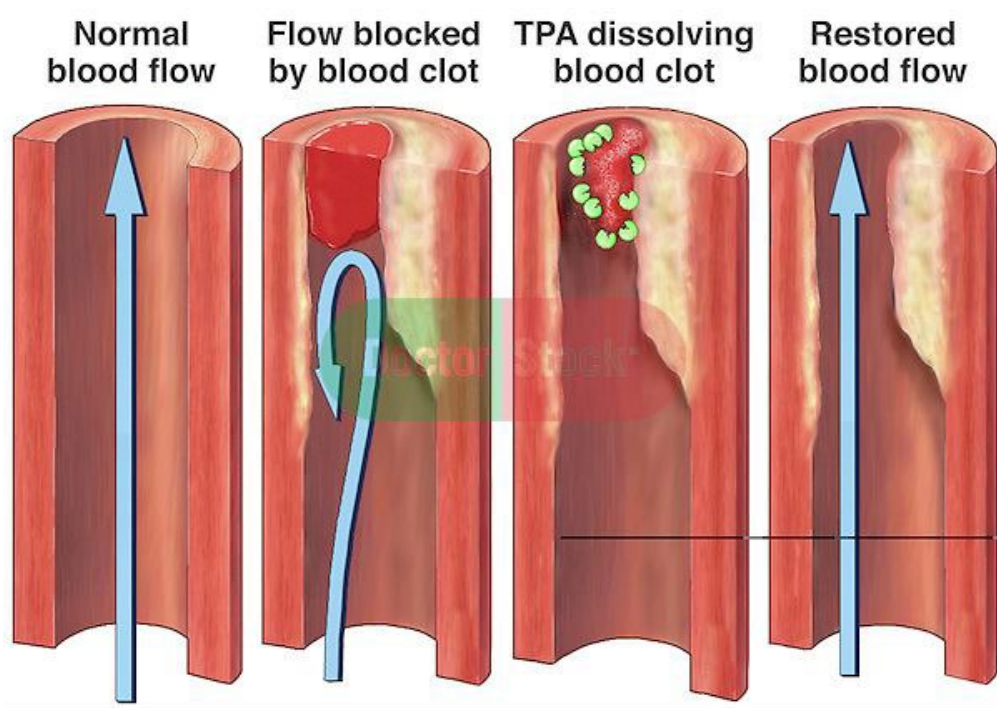


- It used to be that there was no way to treat a stroke. We could only try to prevent the next one from happening.

*But that has changed . . .*

# Minutes matter: get help **before the treatment window closes**

*Ischemic strokes (80% of all strokes) may be eligible for treatment if caught in time!*



- Strokes caused by clots that block blood vessels (ischemic strokes), can be treated with a drug called tPA that dissolves blood clots preventing flow to the brain.
- But tPA can only be used within a short period from the last time a person was known to be symptom free.
- The tPA window of opportunity: within 4.5 hours from symptom onset.

**Call 911**

To be evaluated for treatment, patients need to get to the hospital as soon as possible.

# Minutes matter: get help **before the treatment window closes**



- Some stroke patients – those with a clot in a large vessel in the brain may – be eligible\* for a clot removing procedure.
- But this procedure, called a thrombectomy, also has a window of opportunity.
- The thrombectomy window of opportunity: within 24 hours from symptom onset.

*\*Who is eligible for Thrombectomy? Stroke patients with clots in large vessels in the brain who arrive within 24 hours of symptom onset, and whose brain images show there is brain tissue that can be saved.*

**Call 911**

To be evaluated for treatment, patients need to get to the hospital as soon as possible.

# ACTING FAST = BETTER OUTCOMES

**tPA:** stroke patients who received tPA within 3 hours of the start of stroke symptoms were at least 30% more likely to recover with little or no disability after 3 months.\*

**Thrombectomy:** successful large vessel clot removal is associated with reduced death and disability for eligible patients.\*\*

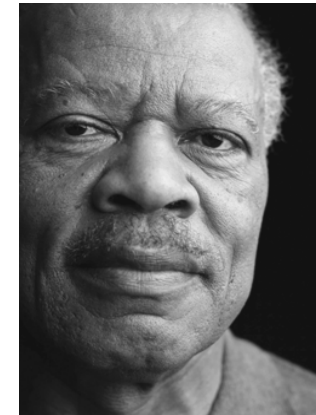


**Recognize signs so  
that you can ACT FAST!**



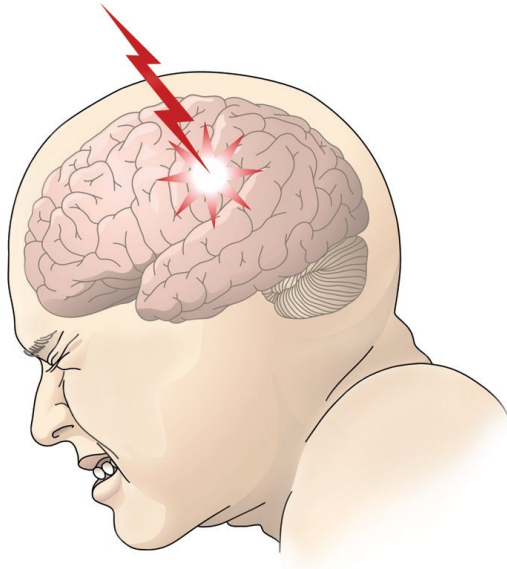


# ACTING FAST = RECOGNIZING SYMPTOMS OF STROKE



*Stroke symptoms happen suddenly or when waking up.*

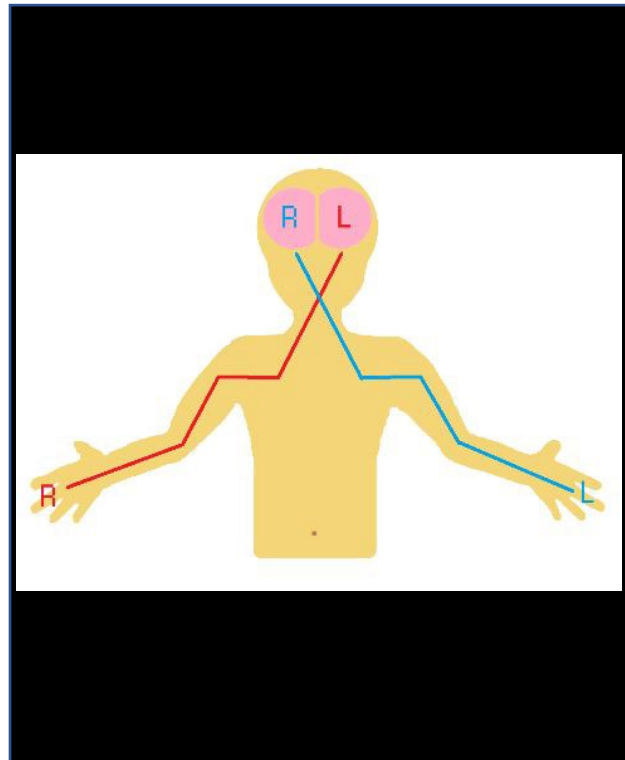
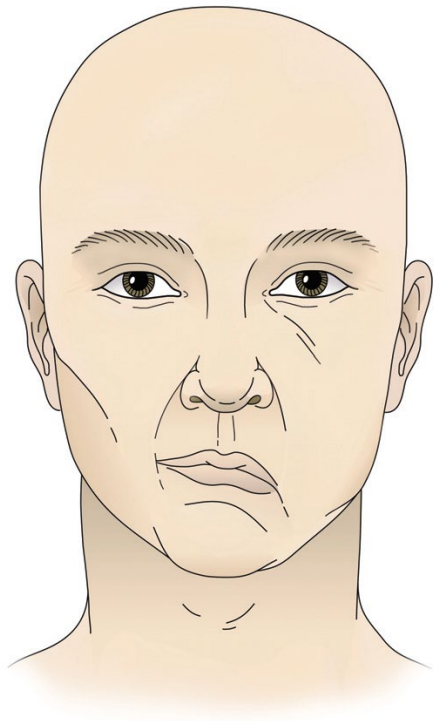
## KNOW THE SIGNS: HEADACHE



### Sudden Severe Headache With No Known Cause

- Everyone gets headaches from time to time. A stroke may lead to a SEVERE headache.
- A headache that is severe, happens all of a sudden, and without a reason, may be a symptom of stroke.

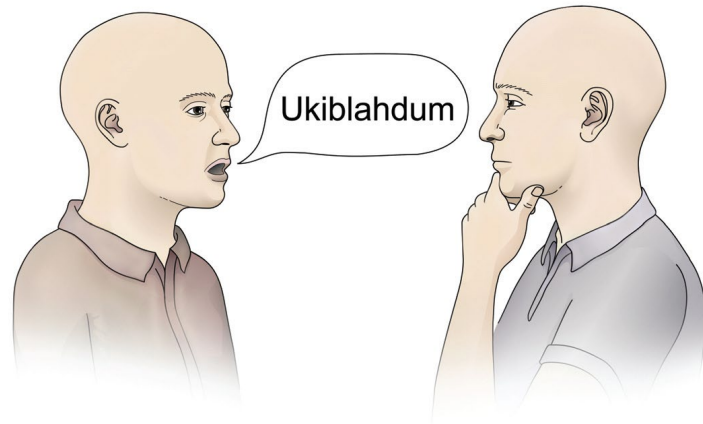
# Know the Signs: Weakness on One Side



Sudden Numbness Or Weakness Of The Face, Arm, Or Leg  
*(especially on one side of the body)*

- Facial droop on one side
- Sudden weakness on one side of the body
- Sudden/ or waking up with inability to feel or move one side of the body (numbness)

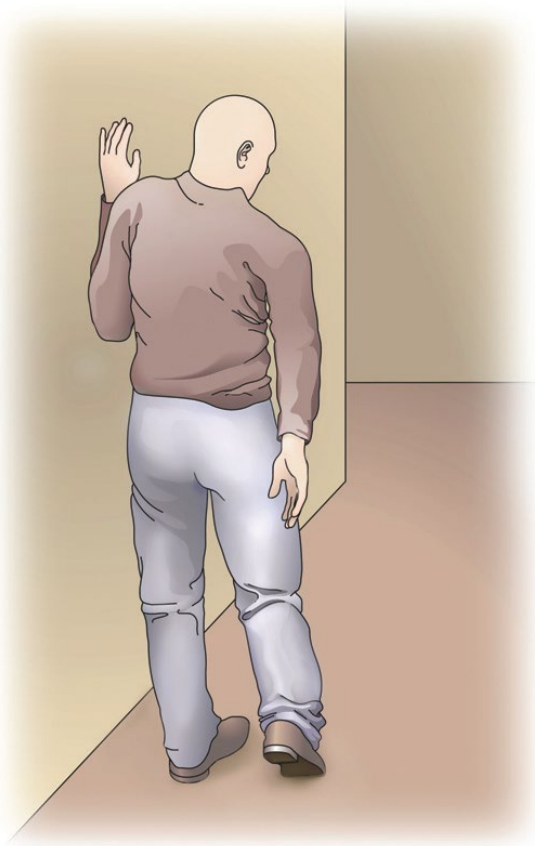
# KNOW THE SIGNS: TROUBLE SPEAKING



## Sudden Confusion, Trouble Speaking Or Understanding Speech

- A person having a stroke can feel confused.
- Because a stroke injures the brain, a person may not understand what is happening.
- The person may not be able to say, “I’m having a stroke.”
- A person may not understand what you are saying.

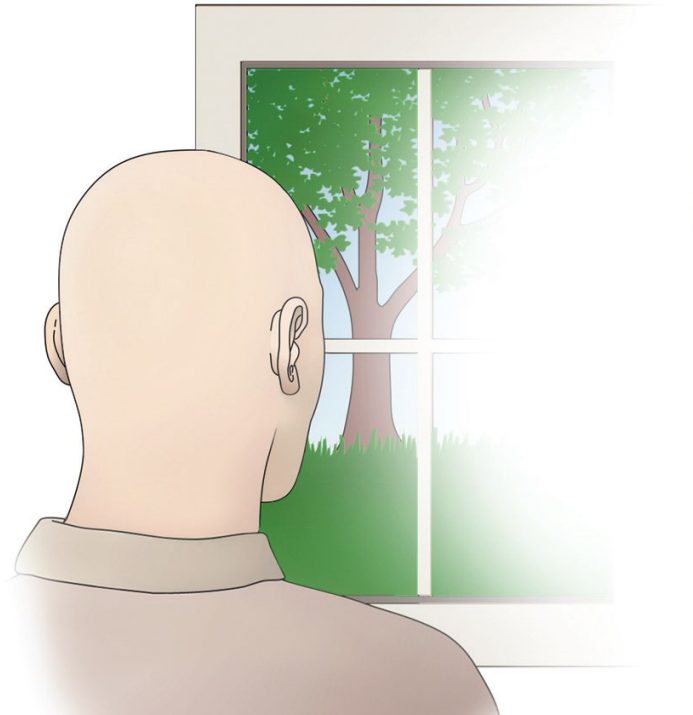
# KNOW THE SIGNS: TROUBLE WALKING



## Sudden Trouble Walking, Dizziness, Loss Of Balance Or Coordination

- Sometimes a stroke happens in the part of the brain that controls the ability to walk normally.
- A person may not be able to walk at all, may fall over when trying to walk.
- A person may feel dizzy.

# KNOW THE SIGNS: TROUBLE SEEING



## Sudden Trouble Seeing In One Or Both Eyes

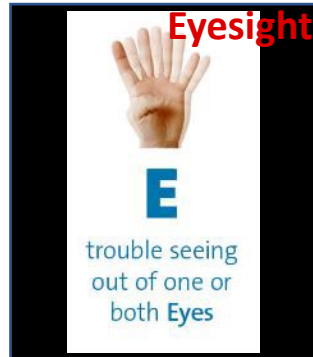
- Sometimes a stroke happens in the part of the brain that controls the ability to see.
- A person may not be able to see out of the left eye, the right eye, or both eyes.
- A person may feel as if a curtain has been placed over half of the field of vision in one or both eyes.

# REMEMBER TO BE FAST

B



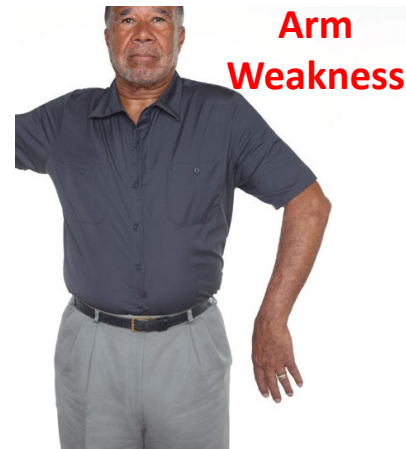
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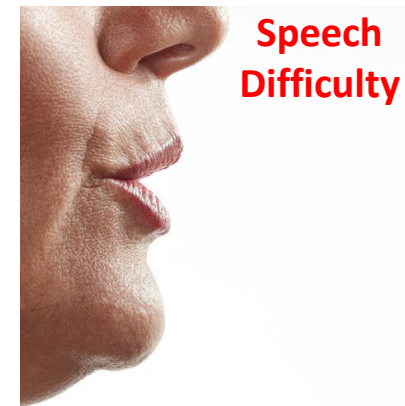
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If you believe you or someone you know is having a stroke,  
**call 911 immediately.**

Think you or someone you love is having a stroke? **BE FAST!**

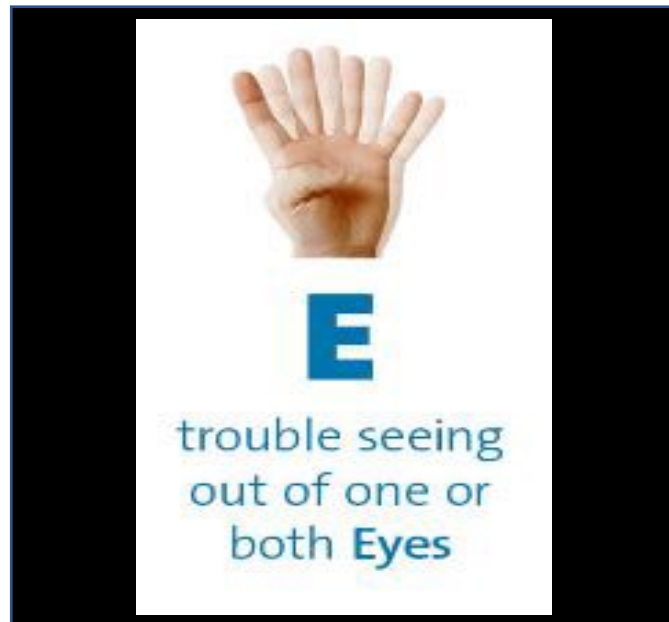


**Balance Loss, Headache, Dizziness**

Does the person have a sudden loss of balance, or complain of dizziness?



Think you or someone you love is having a stroke? **BE FAST!**



**Eyesight**

Has the person lost vision in one or both eyes?

Think you or someone you love is having a stroke? **BE FAST!**



### **Face Drooping**

Does one side of the face droop or is it numb? Ask the person to smile.

Think you or someone you love is having a stroke? **BE FAST!**



### **Arm Weakness**

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

Think you or someone you love is having a stroke? **BE FAST!**



### **Speech Difficulty**

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

# Think you or someone you love is having a stroke? **BE FAST!**



## **Time to call 9-1-1**

If the person shows any of these symptoms, even if the symptoms go away, call 9-1-1 and get them to the hospital immediately.

# Neighborhood stroke resource: URMC **Mobile stroke unit**

UR Medicine's Comprehensive Stroke Center has now extended its reach into the greater Rochester community by putting its services on the road.

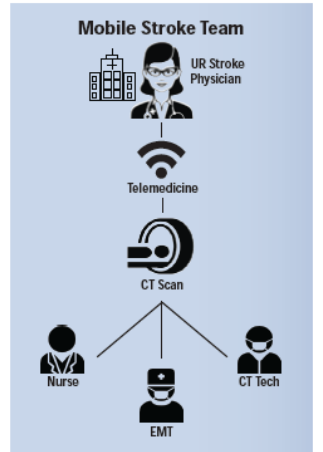


## *Stroke Treatment On Wheels . . .*

- CT scanner on MSU can detect large vessel clots and bleeds.
- Stroke trained nurse on board performs preliminary assessment.
- Neurologist examines patient via telemedicine.
- If patient eligible, clot-busting drugs given right on the ambulance.
- If patient has large vessel clot, MSU works with OR to bring patient from ambulance directly to the operating room for emergency clot removal.



Breaking new ground in acute stroke care in Upstate New York



FEWER THAN  
**0.1%**  
OF STROKE PATIENTS  
IN THE U.S. RECEIVE  
EFFECTIVE TREATMENT  
**WITHIN 1 HOUR**  
OF SYMPTOM ONSET

DURING  
THAT HOUR,  
MORE THAN 120  
**MILLION**  
BRAIN CELLS  
MAY DIE

THE MOBILE STROKE UNIT CAN POTENTIALLY  
DIAGNOSE STROKE IN LESS THAN  
**5 MINUTES**  
ALLOWING TREATMENT THAT MAY  
DECREASE THAT DAMAGE SIGNIFICANTLY

# Neighborhood stroke resource: URMC **Mobile stroke unit**

URMC Research has shown that the MSU can save up to **60 minutes** from **911 call to** clot-busting **treatment** when compared to traditional emergency transport, precisely *due to its ability to treat patients in the field.*



# IMPORTANCE OF **BYSTANDERS**

## **Know** the Signs

Because stroke injures the brain, you may not realize that you are having a stroke. To a bystander, someone having a stroke may just look unaware or confused. Stroke victims have the best chance if someone around them recognizes the symptoms and acts quickly.



If you believe someone is having a stroke – if he or she suddenly loses the ability to speak, or move an arm or leg on one side, or experiences facial paralysis on one side – **call 911 immediately.**



# Preventing strokes to save lives and prevent disability

- The BEST treatment for stroke is **PREVENTION**.
- While family history of stroke plays a role in your risk, there are many risk factors you can control.
- 80% of 1<sup>st</sup> strokes are preventable



Exercise



Eat Healthy



Control Cholesterol



Manage Diabetes



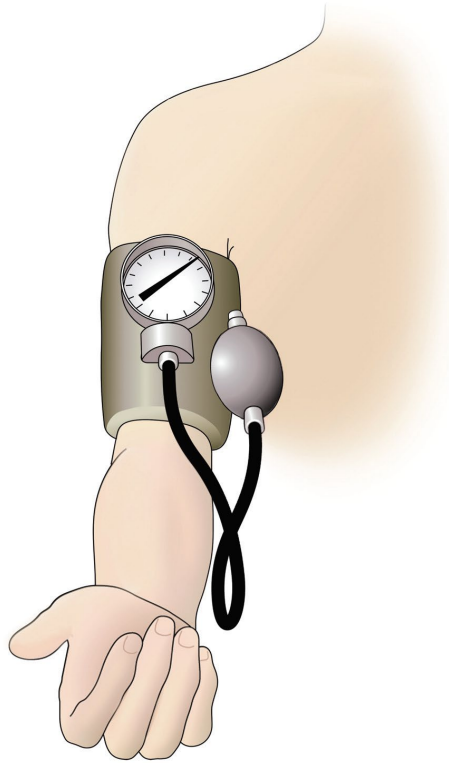
Quit Smoking



Treat High  
Blood  
Pressure

# Reduce your stroke risk

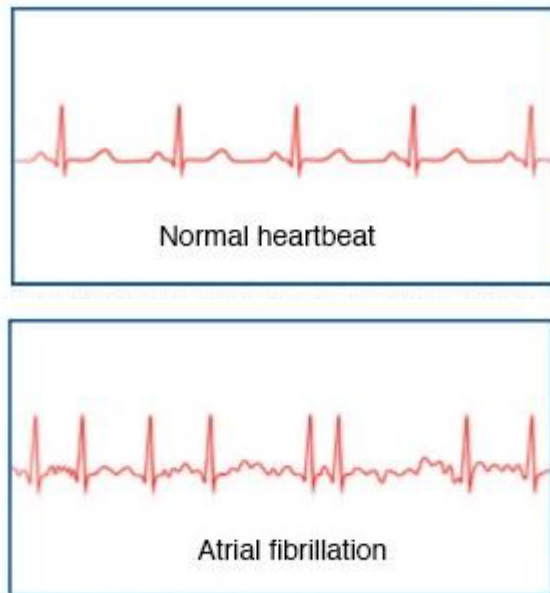
## Treat High Blood Pressure (also called hypertension)



- High Blood Pressure is *the single most important risk factor for stroke* because it is the leading cause.
- High BP (>120/80 over time) adds to your heart's workload and damages your arteries and organs over time.
- People with high BP 2-4 times more likely to have a stroke.
- **Keeping your blood pressure under control is the most important thing you can do to avoid stroke.**
- If you have high blood pressure, work with your doctor to lower your level.

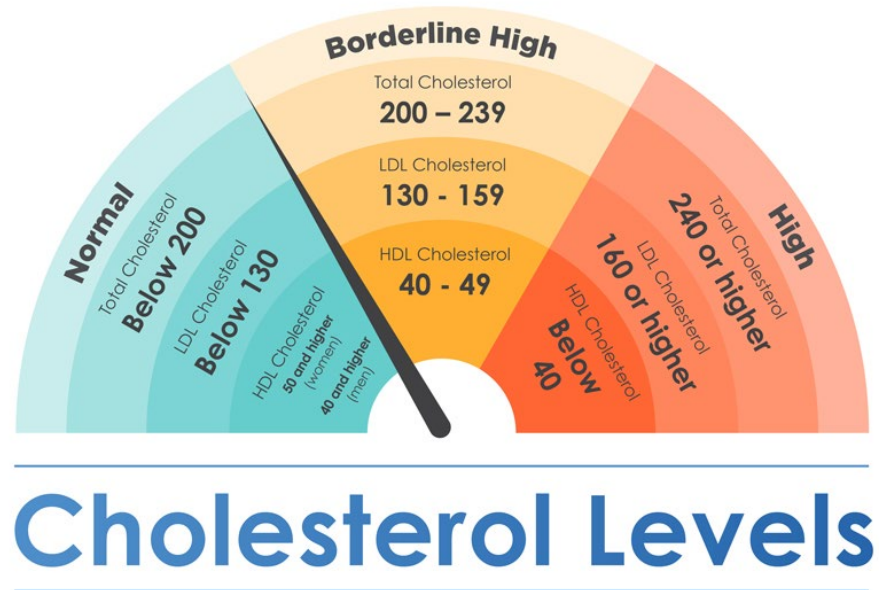
# Reduce your stroke risk

## Manage Heart Disease



- Common heart diseases including coronary artery disease, valve defects, irregular heart beat (atrial fibrillation), and enlargement of one of the heart's chambers can result in blood clots that may break loose and block vessels in or leading to the brain.
- Atrial fibrillation is responsible for one in four strokes after age 80, and is associated with higher mortality and disability.
- If you have a heart disease, work with your doctor to manage your risk. Treatments may include medications that reduce clotting risk, or procedures to clean out clogged arteries.

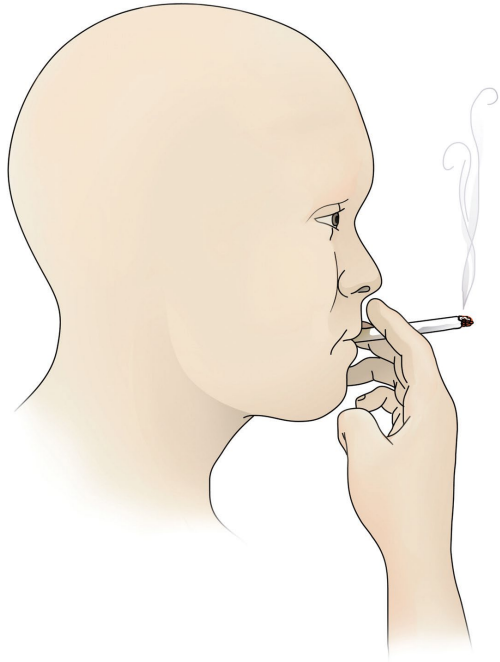
# Reduce your stroke risk



## Treat High Cholesterol

- Too much cholesterol in your blood can build up on artery walls, putting you at risk for blood clots.
- If you have high cholesterol, eat a healthy diet, exercise regularly, and work with your doctor to get it under control.

# REDUCE YOUR STROKE RISK



## Quit Smoking

- Cigarette smoking can double your risk of stroke by damaging blood vessels or causing them to narrow walls, putting you at risk for stroke.
- If you smoke, QUIT.

# Reduce your stroke risk



## Manage Diabetes

- Diabetes causes destructive changes in the blood vessels in the brain, increasing your risk for stroke.
- If you have diabetes, learn how to manage it.

# Reduce your stroke risk



Eat a Healthy Diet and Get Regular Exercise

- Obesity and physical inactivity contribute to high blood pressure, diabetes and high cholesterol.
- Maintain a healthy diet and exercise regularly.