

# Stroke and Afib: New Options in Discovery

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# Objectives

- What is a Stroke?
- What are some risk factors for Stroke?
- What is Afib and how does it increase stroke risk?
- What is a Cryptogenic Stroke and how is it treated?
- What specific device is being used for stroke patients to help detect Afib?
- How can Afib patients best take care of themselves?

# Stroke: Do you know what it is ?

- Stroke is referred to as “**brain attack.**”
- Stroke is a sudden **neurological deficit** caused by interruption of blood flow to the brain.
- Brain has blood vessels. Like a tree, big branches and small ones which carry nutrients. If larger blood vessels are blocked more of the brain can be damaged



- Manifestations of the stroke depend on **which region** or extent of brain affected

# Stroke Facts...

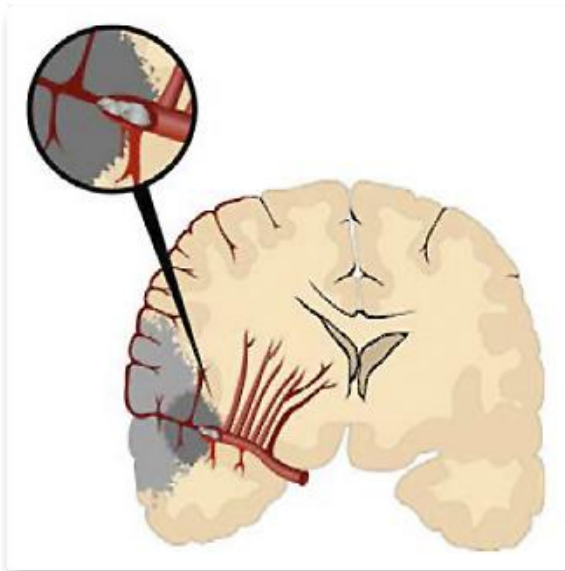


- In the United States:
  - New stroke every **45 seconds** (700,000/ yr)
  - Death from a stroke every 3 minutes (150,000/yr)
  - 3<sup>rd</sup> leading cause of death
  - #1 leading cause of adult disability
  - Sound like something to avoid?

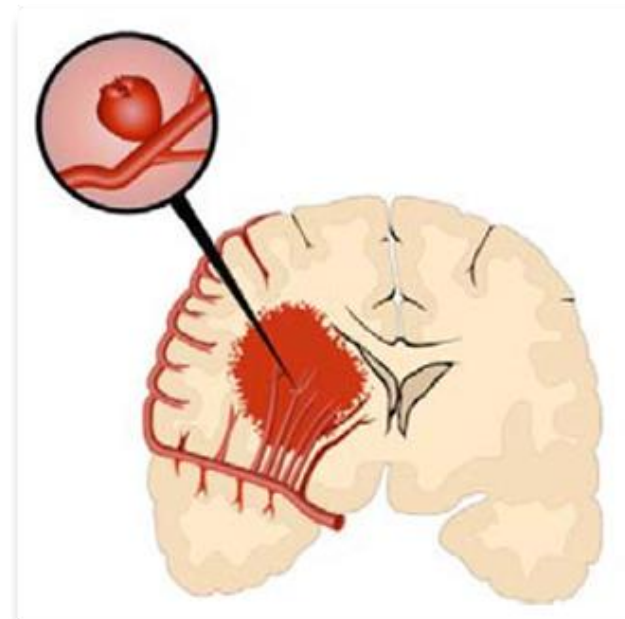
# Stroke Types

An interruption of blood flow to the brain which leads to brain injury.

**Ischemic= “blockage”:** 85%



**Hemorrhagic=“bleeding”:** 15%

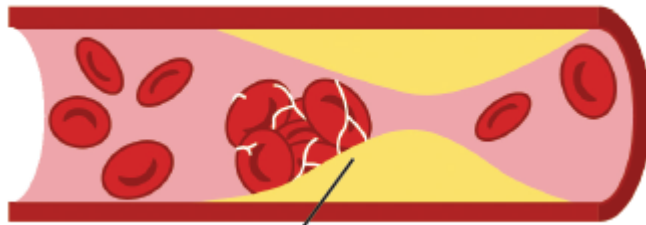


# Ischemic Stroke Types: 2 main

What may cause the blockage?



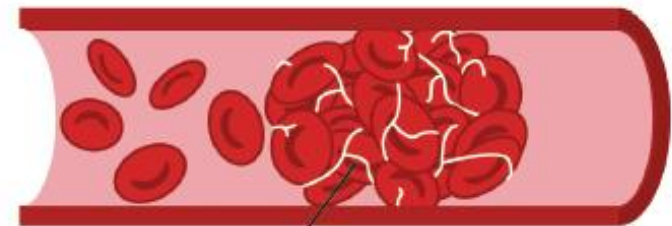
## Thrombosis



Fatty Plaque

blockage of a brain blood vessel due to underlying narrowing from fatty plaque formation

## Embolism



Blood clot

a blood clot from the heart is dislodged and travels to the brain.



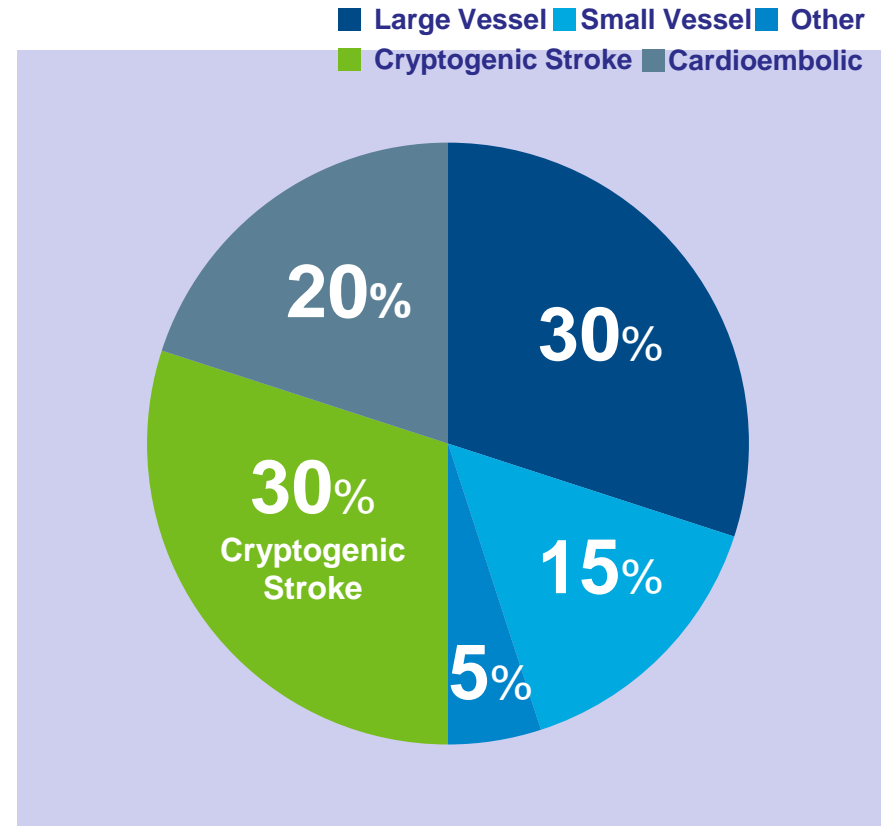
# Stroke “Work Up” in the Hospital

- CT CTA and/or MRI of the Brain
- Labs
- Neurological Exam/Medical History
- Heart/Cardiac Function Tests



# Where did your Stroke come from in the Brain?

- If we know this we can target how to best prevent another stroke!
- Do it by ruling things out
- **Is Yours “Undetermined”??**



<sup>1</sup> Mozzafarian D, et al. *Circulation*. 2015;131:e29-e322.

<sup>2</sup> Kernan WN, et al. *Stroke*. 2014;45:2160-2236.

<sup>3</sup> Sacco RL, et al. *Ann Neurol*. 1989;25:382-390.

<sup>4</sup> Petty GW, et al. *Stroke*. 1999;30:2513-2516.

<sup>5</sup> Kolominsky-Rabas PL, et al. *Stroke*. 2001;32:2735-2740.

<sup>6</sup> Schulz UG, et al. *Stroke*. 2003;34:2050-2059.

<sup>7</sup> Schneider AT, et al. *Stroke*. 2004;35:1552-1556.

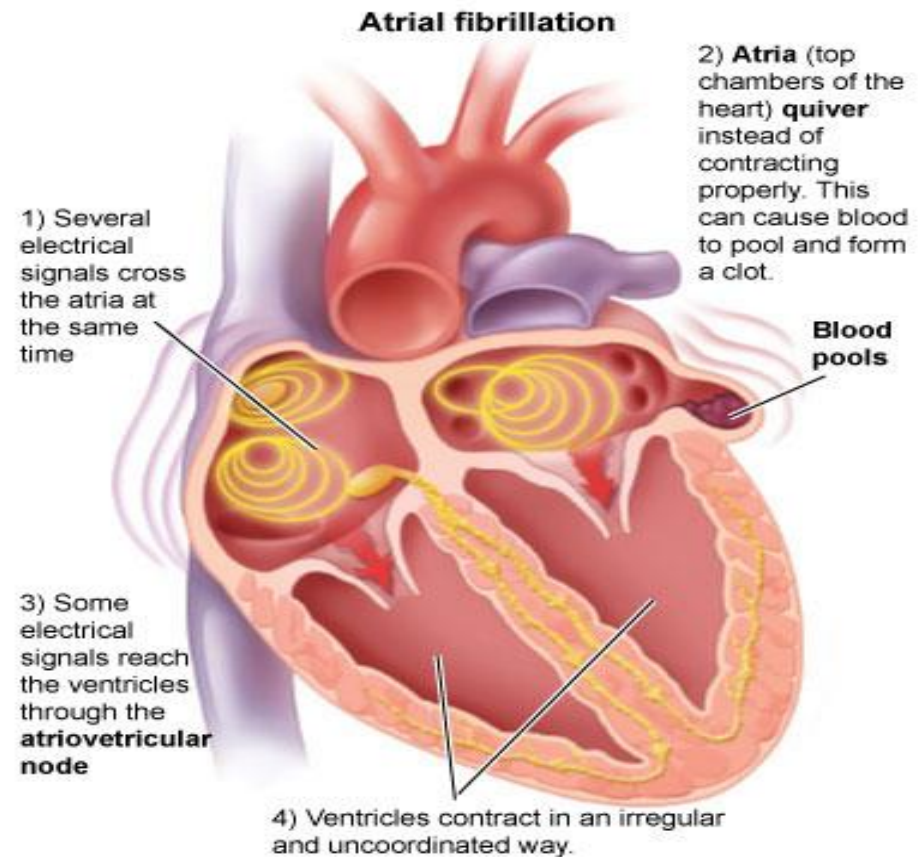
<sup>8</sup> Lee BI, et al. *Cerebrovasc Dis*. 2001;12:145-151.

<sup>9</sup> Sanna T, et al. *N Engl J Med*. 2014;370:2478-2486.



# What is Atrial Fibrillation?

- Atrial fibrillation is a type of heart rhythm disorder called an **'arrhythmia'**
- Atrial fibrillation is a condition that occurs when there is a fault in the electric activity in the heart muscle, causing the heart to beat irregularly and in an uncoordinated way.



When the rate of the electrical signals is very high, the atria quiver instead of contracting properly. They fail to pump all the blood out of the atria. The blood can pool and may form a clot. If a blood clot leaves the atria it can block an artery in the body, causing severe complications, such as **stroke**.

# What are the symptoms of Afib?

- FAST, pounding, irregular heart beat
- Shortness of breath
- Tiredness
- Dizziness or fainting
- Chest pain or tightness
- **YOU MAY NOT HAVE ANY SYMPTOMS!**



# Risk factors for Developing AFib



- Increasing age
- High blood pressure
- Diabetes
- Heart valve disease
- Heart failure
- Previous heart attack
- Heart surgery
- Thyroid problems
- Sleep apnea
- Excessive alcohol intake
- Illegal drug use

# What is my Stroke Risk?

- **CHADS2\*** Score – main tool
- Used for Afib patients to help doctors determine risk for stroke and which medication regimen is right
- Higher score –more likely to be placed on Coumadin vs Aspirin & higher risk for Stroke

- \*CHF, HTN, Age >75,  
DM or Prior Stroke



# How Common is Afib?

- Most common heart arrhythmia
- More than 2.7 million Americans have Atrial Fib
- Risk increases with age
- Number of people with A Fib doubles every decade of life after age 50
- 1 in 200 people between 50 and 59 have A Fib
- 1 in 10 people over 80 years old have A Fib



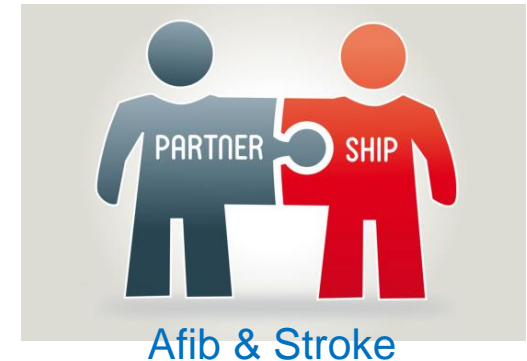
# How can Afib cause a Stroke?

## Watch and See....

- [https://www.youtube.com/watch?v=K\\_uccmtCqZI](https://www.youtube.com/watch?v=K_uccmtCqZI)
- Animation explained

# Afib-Stroke Connection:

- 15% of Strokes are due to **untreated** Afib per American Heart/Stroke Assoc.
- Afib increases your chances of a Stroke **5 times** that of the general population
- \* **2x** more likely for AF related stroke to be fatal as non AF stroke
- Uncontrolled High Blood Pressure is the most common cause of Afib **and** the highest risk factor for Stroke.

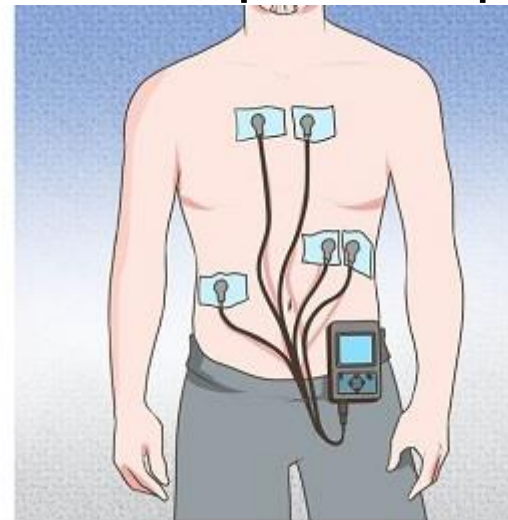


Afib is more common in **women** than men after age 75. Women over 75 should be screened for Afib

\* Lin HJ, et al Stroke.1996 27:1760-64

# But what if they are not **sure** you have Afib??

They have to monitor  
your heart to see if it  
can be picked up





# What type of monitors are **best**?

- Continuous is better than intermittent
- Longer the better so long term with hopes of picking up AF (takes longer than 30 days)
- Easy to use or less invasive to patient's activity
- Highly Sensitive
- **Answer: at Upstate--Implantable Reveal LINQ – Medtronic**

\* 2016 ESC (European Soc of Cardiology) guidelines recommend monitoring with Reveal LINQ in cryptogenic stroke patients

# REVEAL LINQ™ SYSTEM ADVANTAGES REVOLUTIONIZING CARDIAC MONITORING

The smallest, most powerful insertable cardiac monitor

SMALL

One-third the size of a AAA battery (1.2 cc)

3

YEAR

Up to a 3-year longevity for long-term monitoring<sup>1</sup>



MR Conditional at 1.5 and 3.0 Tesla

EASY

Minimally invasive, simplified insertion procedure<sup>2</sup>

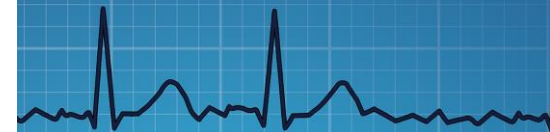
96.7%

96.7% of patients very satisfied or satisfied with Reveal LINQ ICM after insertion<sup>3</sup>

<sup>1</sup> Reference the Reveal LINQ ICM Clinician Manual for usage parameters.

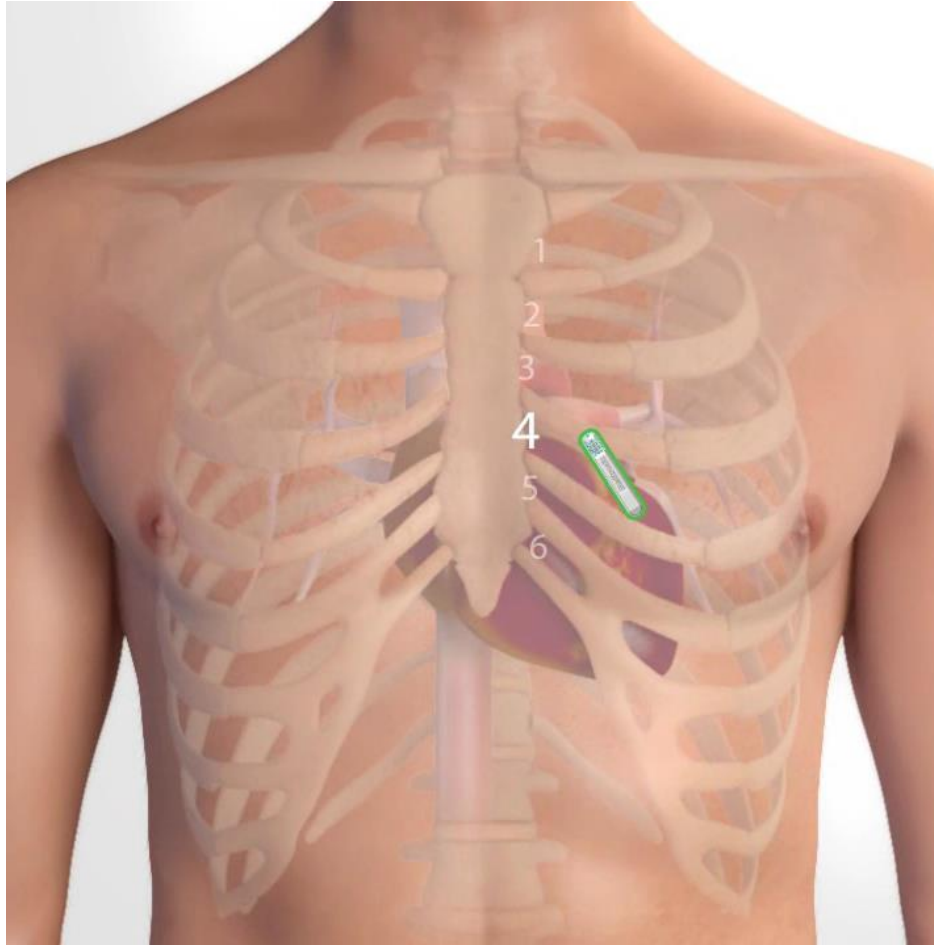
<sup>2</sup> Reveal LINQ Usability Study. Medtronic data on file. 2013.

<sup>3</sup> Pürerfellner H, et al. Heart Rhythm. 2015;12:1113-1119.



# REVEAL LINQ™ SYSTEM ADVANTAGES

## SIMPLE INSERTION PROCEDURE



Best location:  
45 degrees to  
sternum over 4th  
intercostal space,  
2 cm from left  
edge of sternum

**97%**  
of physicians  
found the insertion  
tool simple and  
intuitive.<sup>1</sup>

Requires minimal  
procedure time and  
clinical resources



<sup>1</sup> Reveal LINQ Usability Study. Medtronic data on file. 2013.

# TRURHYTHM™ DETECTION INSIDE ACCURACY EVOLUTION

## Reveal™ XT



**AF**

Industry's first AF detection algorithm

2009

## Reveal™ XT



With FullView™ Software

**PAUSE**

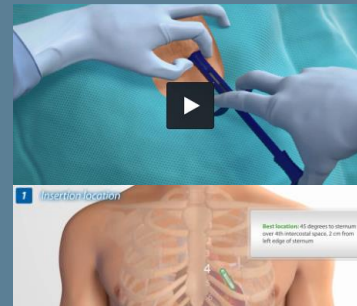
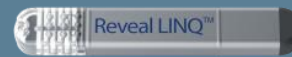
**NEW** Pause algorithm with diminishing R-wave analysis

**AF**

**NEW** AF algorithm and improved noise discrimination

2011

## Reveal LINQ™



**NEW** simplified insertion and tight pocket for better signal

**AF**

**NEW** AF algorithm with increased accuracy

2014

## TruRhythm™ Detection



Streamlined episode review for clinic efficiency<sup>1,2</sup>

**NEW** algorithms with

- Smart filtering
- Self-learning intelligence

BRADY PAUSE AF

2017

<sup>1</sup> TruRhythm™ Detection Efficiency. Medtronic data on file. 2017.

<sup>2</sup> TruRhythm™ Detection Algorithms. Medtronic data on file. 2017.

# Our Experience so far .....



Once placed: Follow up with Cardiology

# I have Afib! Don't want a Stroke What can I do?



Your Doctor/Provider and You



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Comprehensive Stroke Center

# Treatment Goals for Afib



- Maintain Normal Sinus Rhythm (regular, steady)
  - Rate Control
  - Decrease Symptoms
  - Decrease Stroke Risk

# Medication Therapy

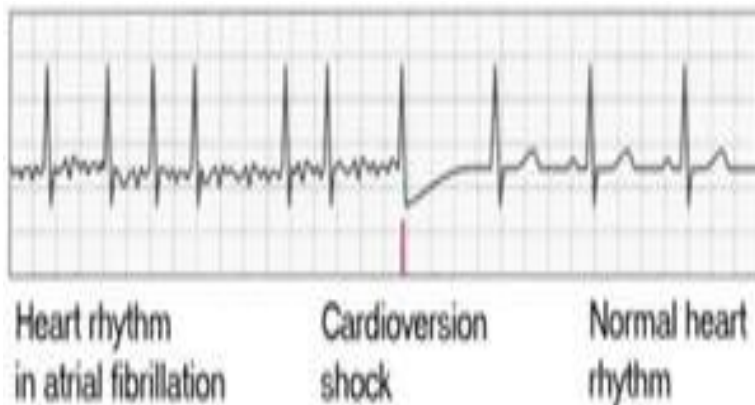
## Medication Therapy Goals for Atrial Fibrillation include:

- Maintaining normal heart rhythm
  - -Antiarrhythmics (amiodarone, flecainide, sotalol)
- Controlling the heart rate
  - Beta Blockers (metoprolol, atenolol, carvedilol, bisoprolol)
- **Preventing stroke NOAC drugs**
  - **Anticoagulants, Coumadin (warfarin), Pradaxa, (Dabigatran) Eliquis (Apixaban), Xarelto, (Rivaroxaban)**

67%: decrease in AF patient stroke risk with oral anti-coagulant



# Procedures Used in Treatment



- **Cardioversion:** heart is shocked to convert rhythm- done in a EP lab or surgery center
- **Ablation:** uses a catheter where an energy source is used to destroy the abnormal electrical paths in the heart-done in EP lab or surgery center
- **Others:** involve Pacemakers, incisions/Maze Procedure to heart itself
- Success rates vary, may repeat

# Control? How to do it...

## Support your **Heart**



- **#1 Medication:** take blood thinners **AS DIRECTED!**
- Follow Medication related instructions such as blood draws, BP checks and MD visits: be diligent!
- Medication: carry a list of your meds with you and give 1 to your Emergency contact, keep it updated.

# More Control.....

## #2 : Heart Healthy Diet Choices



- ✓ Control Sugar Intake--- High Blood Sugar stresses the heart
- ✓ A little goes a long way! Small changes are good too
- ✓ Watch FAT and Cholesterol---- many many options now
- ✓ Ask for a Nutrition consult : Dietician

# More Control..... #3: MOVE!!



Any weight loss will reduce strain  
on the heart

Do what **YOU** can do! Not  
strenuous!!

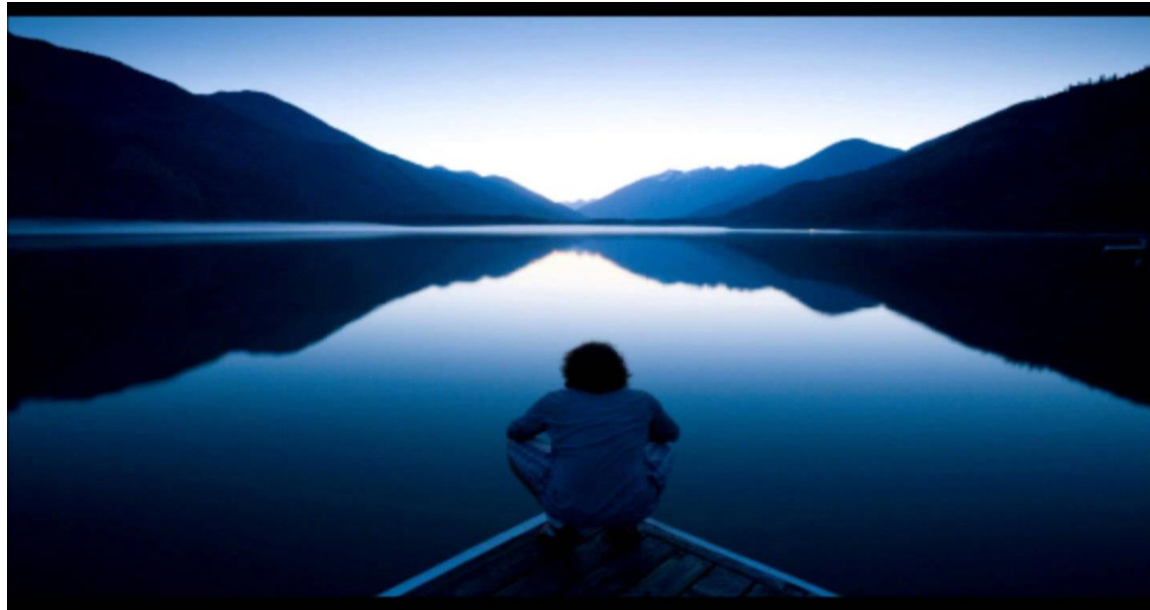
Anything in moderation and  
regularly is the ticket!

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# More Control.....

## #4: Sleep Apnea & Lower Stress



**Breathe**

**Laugh**

**Meditate**

**Avoid Stressful situations: say No**

**Do fun things/Hobbies**

**Get good sleep/rest**

# More Control.....

## #5: Get educated/stay aware

- Know your body: keep it checked
- Know your resources: MD office, library, YMCA, Office of the Aging
- Ask for help! Spouse, child, friend to remind and support
- Be Smart: use tools to help: alarms, pill boxes, frig magnets, smart phones, notebook or logs
- Read what you can

# Signs of Stroke

- Sudden numbness or weakness, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing
- Sudden dizziness, trouble walking or loss of balance
- Sudden, severe headache



# Think “FAST”

## SPOT A STROKE



Stroke Warning Signs and Symptoms



# What Next? Panic?

- **NO!!! Call 911**
- Don't try to bring the person yourself
- EMS communicates with the hospital and can help if symptoms worsen or change
- Do not ignore the symptoms even if they go away!!



# What is a Comprehensive Stroke Center?

- Certified by DNV Healthcare
- Cares for ALL types of stroke patients
- 24/7 access to endovascular procedures
- 24/7 on site neurosurgical availability
- Three levels of specialized neuroscience nursing care
  - Neuro ICU
  - Neuro Step-down
  - Neuro floor
- Multidisciplinary approach to stroke care across the continuum of the disease process
- Catheter based therapy for patients beyond the tPA window.
- Only 6 Comprehensive Stroke Centers in NYS



Knowing changes everything.™



DESIGNATED  
STROKE CENTER

New York State Department of Health

UPSTATE  
Comprehensive Stroke Center

# Pass the Word about Stroke!

- Tell others about **F-A-S-T**
- Friends, Family, Colleagues, Church Groups
- Talk it up!!
- THANK YOU.....



# References

- Cryptogenic Stroke: Therapy Awareness Presentation – Medtronic 2018
- Atrial Fibrillation know your treatment options presentation by E. Ohern, RN and D. Walborn, RN Feb 2016.
- [Www.StopAFib.org](http://www.StopAFib.org)
- [Www.afibmatters.org/](http://www.afibmatters.org/)
- [Www.Medtronic.com](http://www.Medtronic.com)
- [Www.MedtronicAcademy.com](http://www.MedtronicAcademy.com)