

# Prevention of Stroke

*Information for your patients, your family, yourself*

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## Risk Assessment/Prevention

- **Click it or Ticket campaigns increased seat-belt use to 77.1% (NHSTA, Evaluation of Click it or Ticket Model Programs, 2002)**
- **Helmets motorcycles, bicycles, ice/roller skaters, skiers, skate/snow boarding (Society for Public Health Education, 2007)**
- **Hand hygiene is the single most effective means of preventing the spread of all infections among hospital patients and personnel [www.cdc.gov/handhygiene](http://www.cdc.gov/handhygiene)**
- **Study finds many Americans forgo preventive medical care (American Journal of Preventive Medicine, 5/23/06)**

## Stroke Epidemiology

- 780,000 new or recurrent strokes annually
- 600,000 are 1<sup>st</sup> attacks, 180,000 recurrent
- Year 2050 1 million strokes
- Second leading cause of death worldwide
- Leading cause of serious, long-term disability in the US
- 4,600,000 stroke survivors alive today
- Every 40 seconds someone in the US has a stroke
- On average, every 3 to 4 minutes someone dies of a stroke
- #2 killer of WOMEN
- 75% of strokes occur in people over age 65
- Estimated direct and indirect cost of stroke for 2008 is \$65.5 billion
- Most *Preventable* of all Catastrophic Conditions

(GCNKSS, NCHS, NINDS, NLBI; 2007)

**The greatest impact  
on stroke as a public  
health issue is via  
preventive measures**



- ***Primary Prevention***  
target recognized risk factors with the aim of reducing the incidence of first stroke

- ***Secondary Prevention***  
aim to reduce recurrent stroke in those who have suffered a TIA or Stroke

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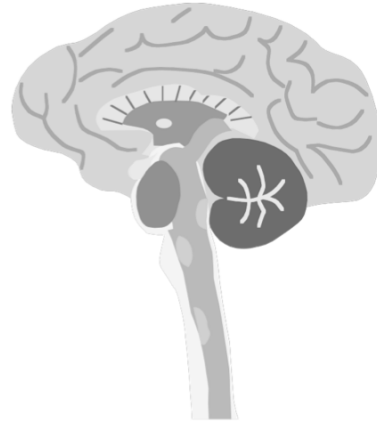


"My doctor told me to start my exercise program very gradually. Today I drove past a store that sells sweat pants."

## Stroke Sub-types

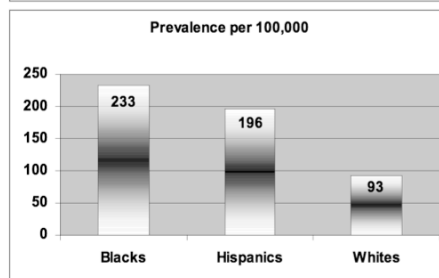
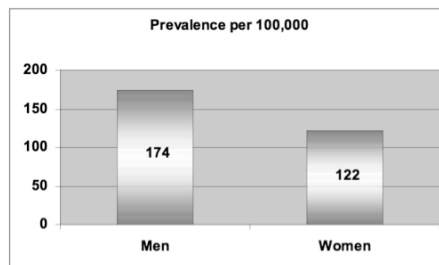
## Risk Factors

- **Non-modifiable**
- **Modifiable**
- **Potentially modifiable**
  - less well-documented



## Risk Factors Non-Modifiable

- **Age**
- **Gender**
- **Race**
- **Family history**



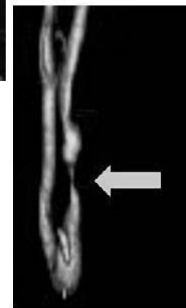
## Risk Factors Modifiable

- **Hypertension**
  - 6 mm Hg decrease in diastolic blood pressure = 40% reduction in incidence of stroke
  - BP goal: 130/80, optimally: 120/80
- **Heart disease** LVH, MI, angina, ventricular thrombus, prosthetic valves
  - anti-platelets and beta blockers
- **Atrial fibrillation**
  - stroke risk 20x's >AF and valvular dx, 5x's > non-valvular AF
  - overall prevalence 1%, >65 years 6%
  - anticoagulation



## Risk Factors Modifiable

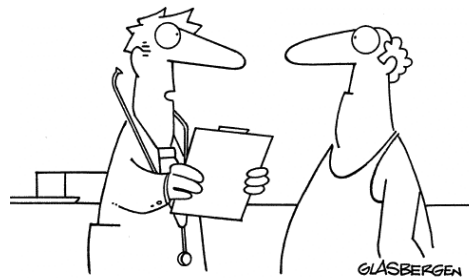
- **Diabetes**
  - maintaining near normal levels of blood glucose  $\leq 126$  mg/dL, HbA1c  $\leq 7.0$
  - rigorous control of BP and lipids
- **Hypercholesterolemia**
  - cholesterol  $< 200$ , triglycerides  $< 150$ , HDL 40-60, LDL  $< 100 - 70$
  - consider statin therapy
- **Asymptomatic Carotid stenosis**
  - manage risk factors aggressively, asa, prophylactic
  - CEA (60-99% stenosis)
- **Prior stroke or TIA**
  - Reported rate of recurrence varies 3%-22% at 1 yr, 10%-53% at 5 yrs
  - 14% 30 days after TIA, 10.5% risk at 90 days
  - antiplatelet/anticoagulation therapy



## Risk Factors Modifiable Behaviors

- **Smoking**
- **Alcohol**
- **Obesity & Waist-Hip ratio**
- **Diet**
- **Exercise**
- **Stress**

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“The handle on your recliner does not qualify as an exercise machine.”

## Potentially Modifiable Risk Factors

### Hyperhomocysteinemia

daily intake of folate, B<sub>6</sub> and B<sub>12</sub> may be useful in reducing the risk of stroke

### LP(a)

treatment with niacin can be considered (reduces Lp(a) levels by approximately 25%)

### Prothrombotic

insufficient data to support specific recommendations for primary stroke prevention in patients with a hereditary or acquired thrombophilia (? higher risk in women with APLA)

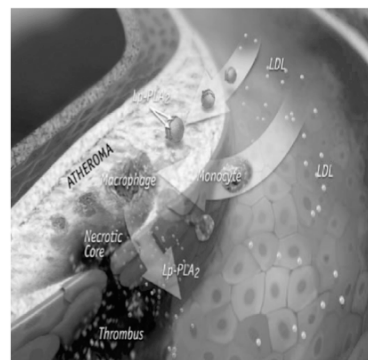
### Inflammation

CRP can be useful when considering the intensity of risk factor modification in those with cardiovascular risk

### Oral contraceptive use/HRT

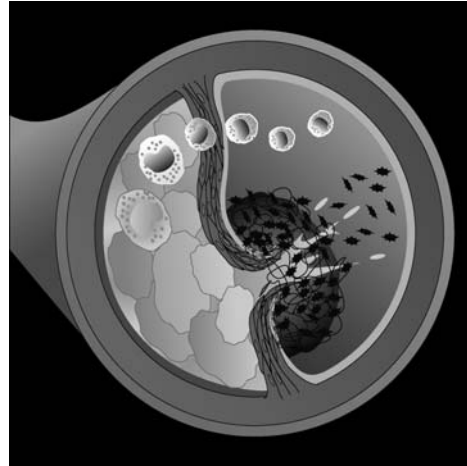
incremental risk of stroke associated with use of low-dose OCT in women without additional RF appears low

- It is suggested that OCT be discouraged in women with additional RF (e.g., smoking; prior thromboembolic events)



## Potentially Modifiable Risk Factors

- **Patent Foramen Ovale**  
prevalence in the general population may be >20%. No evidence to support closure
- **Migraine**  
insufficient data to recommend specific Rx for primary stroke prevention
- **Obstructive sleep apnea**  
screening and referral (esp, if malignant HTN)
- **Insulin Resistance**  
pre-diabetic state. IRIS trial on-going



## Stroke Risk Scorecard



National Stroke Association

<i>Risk Factor</i>	<i>High Risk</i>	<i>Caution</i>	<i>Low Risk</i>
*Blood Pressure	> 140/90 or I don't know	120-139/80-89	<120/80
*Cholesterol	> 240 or I don't know	200-239	<200
*Diabetes	Yes	Borderline	No
*Smoking	I still smoke		
*Atrial Fibrillation	I have an irregular heartbeat	I don't know	My heartbeat is regular
*Diet	I am overweight	I am slightly overweight	My weight is healthy
*Exercise	I am a couch potato	I exercise sometimes	I exercise regularly
*I have stroke in my family	Yes	not sure	no

Score (each box=1)

# Stroke Risk Scorecard



National Stroke Association

CORPORATE ALLIANCE BOARD

## TO REDUCE YOUR RISK FOR STROKE:

1. Know your blood pressure. If high, work with your doctor to lower it.
2. Find out from your doctor if you have atrial fibrillation.
3. If you smoke, stop.
4. If you drink alcohol, do so in moderation.
5. Find out if you have high cholesterol. If so, work with your doctor to control it.
6. If you are diabetic, follow your doctor's recommendations carefully to control your diabetes.
7. Include exercise in the activities you enjoy in your daily routine.
8. Enjoy a lower sodium (salt), lower fat diet.
9. "Ask your doctor" how you can lower your risk of stroke.
10. **KNOW THE SYMPTOMS OF STROKE.**

If you have any stroke symptoms, seek immediate medical attention.

Symptoms include:

- Sudden numbness or weakness of face, arm or leg - especially on one side of the body.
- Sudden confusion, trouble speaking or understanding.
- Sudden trouble seeing in one or both eyes.
- Sudden trouble walking, dizziness, loss of balance or coordination.
- Sudden severe headache with no known cause.

If you have experienced any of these symptoms, you may have had a TIA or a stroke – call 911 immediately!

1-800-STROKES 1-800-787-6537 [www.stroke.org](http://www.stroke.org)

If your RED score is 3 or more, please ask your doctor about stroke prevention right away

If your yellow score is 4-6, you're off to a good start. Keep working on it!

If your green score is 6-8, congratulations! You're doing very well at controlling your risk for stroke!



BRIGHAM AND  
WOMEN'S HOSPITAL

## Know Stroke → Know the Signs



Patients and families will learn what a stroke is, what the symptoms are, treatment options, follow-up and support

**Classes are held the 3<sup>rd</sup> Wednesday of the month  
from 8:30 to 9:30AM**

**Kessler Health Education Library  
75 Francis Street, Boston, MA 02115**

Call (617) 732-8103 or TTY/(617) 525-7337 to register  
FREE parking included

F. A. S. T.

**Is it a stroke? Check these signs FAST!**

**Face**



Does the face look uneven?  
Ask them to smile.

**Arm**



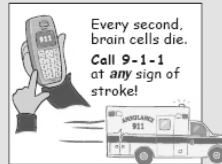
Does one arm drift down?  
Ask them to raise both arms.

**Speech**



Does their speech sound strange?  
Ask them to repeat a phrase.

**Time**



Every second, brain cells die.  
Call 9-1-1 at any sign of stroke!

**Act FAST. Call 911 at any sign of stroke!**

Massachusetts Department of Public Health

Questions  
?????

