

Stroke

Be Stroke Smart

Reduce: stroke risk

```
graph TD; A[Reduce: stroke risk] --> B[Recognize: stroke symptoms]; B --> C[Respond: at the first sign of stroke, Call 108 (ambulance) immediately!]
```

Recognize: stroke symptoms

Respond: at the first sign of stroke,
Call 108 (ambulance) immediately!

Heart attack and brain attack

- Both are diseases due to vascular causes
- Share same risk factors
- Acute in onset
- High mortality and morbidity
- 1st and 3rd most common causes of death
 - Stroke receives less attention than AMI
 - Stroke is treated in different ways than AMI

The Perceptions of Stroke

Myth

- **Stroke is not preventable**
- **Stroke cannot be treated**
- **Stroke only strikes the elderly**
- **Stroke happens in the heart**
- **Stroke recovery ends after 6 months**

Reality

- Up to 80% percent o are preventable
- Stroke requires eme treatment
- Anyone can have a
- Stroke is a “Brain Att
- Stroke recovery can lifetime

His silence is golden: Everyone wants a piece of Atal Bihari Vajpayee

The real Atal Bihari Vajpayee meanwhile sits in his wheelchair at his home in Delhi firmly out of sight. *The Times of India's* Akshay Mukul had a poignant glimpse into the life of the BJP's Miracle Man rendered silent by a **stroke**, watching snatches of television, passing his days in a blur of doctors, nurses and physiotherapists.



HP chief secy suffers major brain stroke

HT Correspondent, Hindustan Times Shimla, October 10, 2013

First Published: 18:27 IST(10/10/2013) | Last Updated: 18:29 IST(10/10/2013)

Ads by Google

Aranyam Valley

Wavacity.in/AranyamValley - Luxury Apartments Amidst Nature, 44-Acre Gated Community. Enquire!

BBC NEWS WORLD EDITION

News Front Page



Africa
Americas
Asia-Pacific
Europe
Middle East
South Asia
UK

Business

E-Commerce
Economy
Market Data

Entertainment
Science/Nature

Technology
Health

Talking Point

You are in: Business

Tuesday, 25 June, 2002, 13:03 GMT 14:03 UK

Indian business giant suffers stroke



Dhirubhai Ambani (centre) with sons Anil and Mukesh

The founder and chairman of India's largest private sector company, Dhirubhai Ambani, has been sent to hospital after suffering a second stroke.

dna

ANALYSIS NEWS SPORT MONEY SCI/TECH DNA PIX ENTERTAINMENT REVIEWS FE



Admission process in danger: Pune Police warns parents to stay alert



Santhi Upadhyay appointed Delhi BJP chief



It's not just the Senate, even govt stocks fall on warnings outside

Home - Home

Striking them young: docs see one case a day

Tuesday, 29 October 2012 - 12:55pm IST | Place: Pune | Agency: DNA

Ashya Khan

Follow @ashyaxan

Follow 1.6k

Shweta Kulkarni

Follow 1.6k



See also:

- ▶ 15 Apr 02 | Business
Indian energy giant merger approved
- ▶ 04 Mar 02 | Business
Merger to create Indian energy giant

Internet links:

- ▶ Reliance Industries
- ▶ Reliance Petroleum

The BBC is not responsible for the content of external



EVERY 6 SECONDS
stroke kills someone.

EVERY OTHER SECOND
Stroke attacks a person – regardless of age or gender.

17 MILLION PEOPLE
experience a stroke each year; 6 million of them do not survive.

ABOUT 33 MILLION PEOPLE have had a stroke – most have residual disabilities.

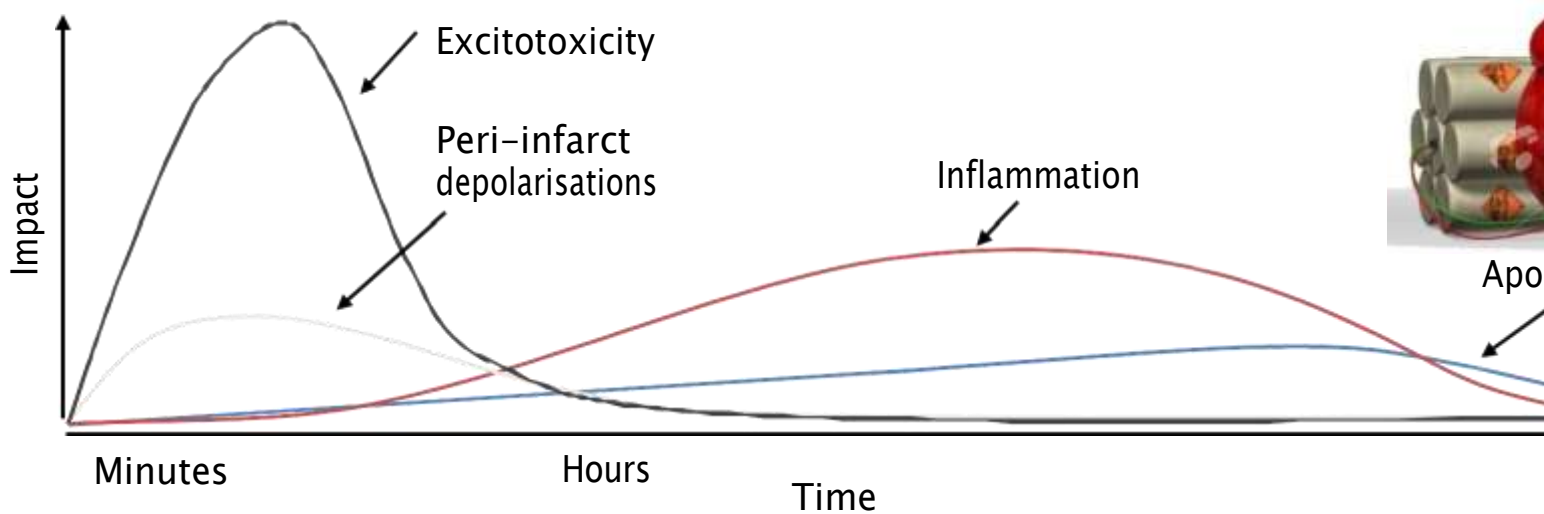
BEHIND THESE
NUMBERS ARE
REAL LIVES.

Stroke in India

- 14.4 –16.4 lakh cases of new acute strokes every year (WHO 2005, Murthy 2007)
- 3,000–4,000 strokes every day
- 63,98,000 DALYs (WHO 2009)
- 12% of strokes occur in the population aged <40 years (Shah + Mathur 2006)

LIKE 10–15 BOEINGS CRASHING
EVERYDAY

“Time is brain”



Estimated Pace of Neural Circuitry Loss In Typical Large-Vessel Supratentorial Acute Ischaemic Stroke

	Neurons Lost	Synapses Lost	Myelinated Fibres Lost	Accelerat
Per Stroke	1.2 billion	8.3 trillion	7140 km	36
Per Hour	120 million	830 billion	714 km	3.6
Per Minute	1.9 million	14 billion	12 km	3.1
Per Second	32,000	230 million	200 m	8.7

Definition of Stroke

- Sudden brain damage
- Lack of blood flow to the brain caused by a clot or rupture of a blood vessel

Ischemic = Clot

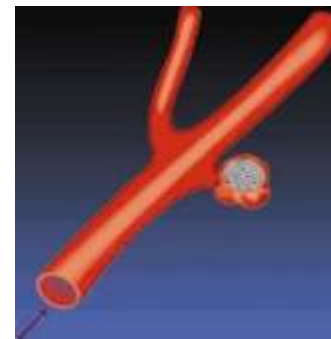
(makes up approximately
85% of all strokes)

Common Risk Factors include

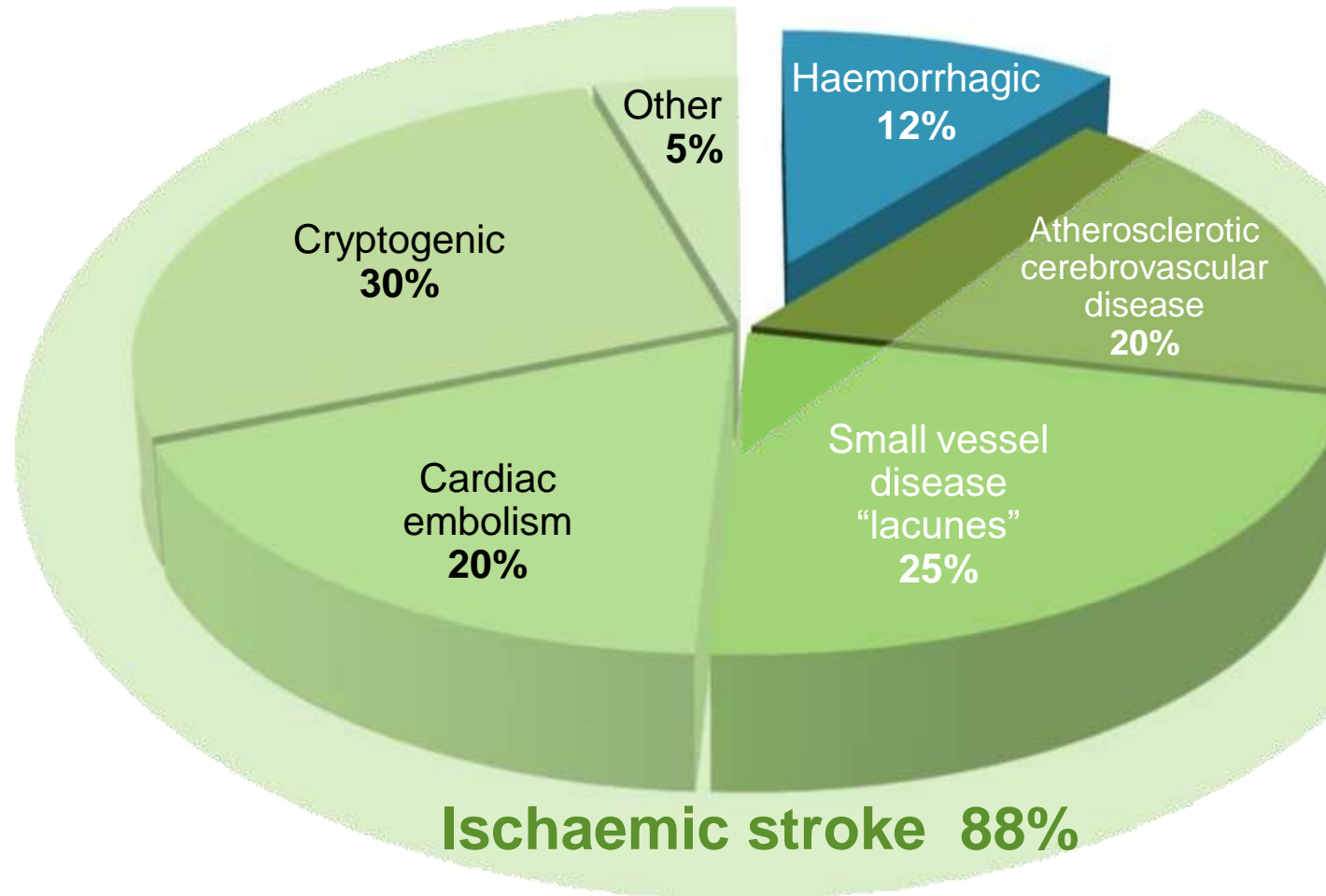
Hypertension
High cholesterol
Diabetes
Smoking
Atrial Fibrillation (irregular heart
beats)

Hemorrhagic = Bleed

- Bleeding around brain
- Bleeding into brain



Stroke Types and Incidence



Albers et al. *Chest* 2004;126 (3 Suppl):
Thom et al. American Heart Association. *Circulation* 2006;113

Witnesses are the key to Identify acute stroke symptoms

**Severe, sudden-onset
headache**

Dizziness

Unconsciousness

**Visual disturbance or loss
of sight in one or both eyes**

**Difficulty speaking,
forming or slurring words**



**Confusion and/or
difficulties understandin
what is being said**

**Numbness of the fac
drooping of the mout
one side**

**Weakness or complete los
of movement and/or
sensation in one or more
limbs**

IMPORTANT

**Note the time at which these symptoms started and call the
emergency services immediately**

Face Arm Speech Test (F.A.S.T. an initiative)

To check for stroke symptoms, remember F.A.S.T.



Face drooping
or new facial
asymmetry on
smiling



Arm weakness
or paralysis on
one side



Speech difficulty
or slurring of
speech



Time to call
the emergency
services (108)

Treatment Modalities Available for Acute Ischaemic Stroke

Medical

- Can be administered only within 4.5 hours of stroke onset*
- Any hospital with a CT scan can potentially administer the medication
- Therapy essentially dissolves clot in the cerebral vessel to enable reperfusion

Surgical

- Intervention can be done within 6 hours of stroke onset*
- Requires sophisticated set up and skilled personnel
- Therapy involves manually breaking clot using specialized devices
- Procedure – Mechanical Thrombectomy

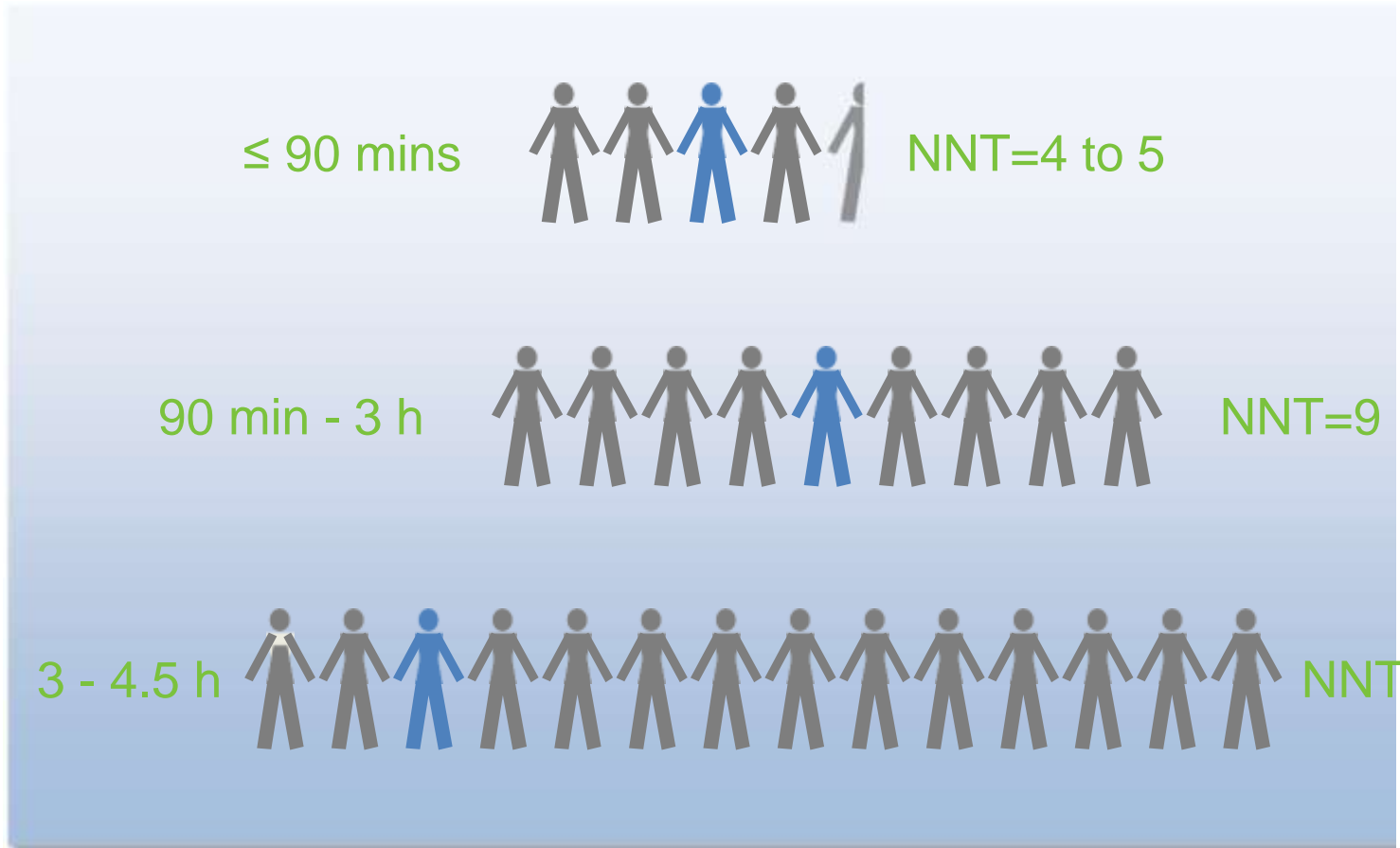
Alteplase

- Is a Clot lysing Drug
- It is the only approved drug for the treatment of *acute ischaemic stroke*
- Has to be administered within 4.5 hours of experiencing symptoms.*

AIS IV thrombolysis with rt-PA

- AIS patients benefit from intravenous rt-PA when treated up to 4.5 h
- **The earlier treatment with rt-PA is administered, the greater the benefit**
- To maximize benefit, every effort should be taken to shorten delay in of treatment
- Beyond 4.5 h, risk might outweigh benefit

Thrombolysis: Number of Patients Neede Treat (NNT) to Achieve Excellent Recovery (m



mRS, modified Rankin Scale

Lees et al. *Lancet* 2010;375:

Intraarterial Thrombolysis

Intra-arterial thrombolysis should be given in stroke centres with the appropriate level of e

Potential indications for i.a. rather than iv or in addition to iv thrombolysis include:

Primary intra-arterial thrombolysis

- Severe disabling neurological deficit and
- Contraindications to iv thrombolysis (e.g. recent surgery), 3–6 h from symptom onset or
- Dense artery sign on the CT head scan

Rescue thrombolysis

- Severe disabling neurological deficit and
- No improvement (or worsening without bleed) with iv thrombolysis
- No recanalization or early reocclusion after iv thrombolysis

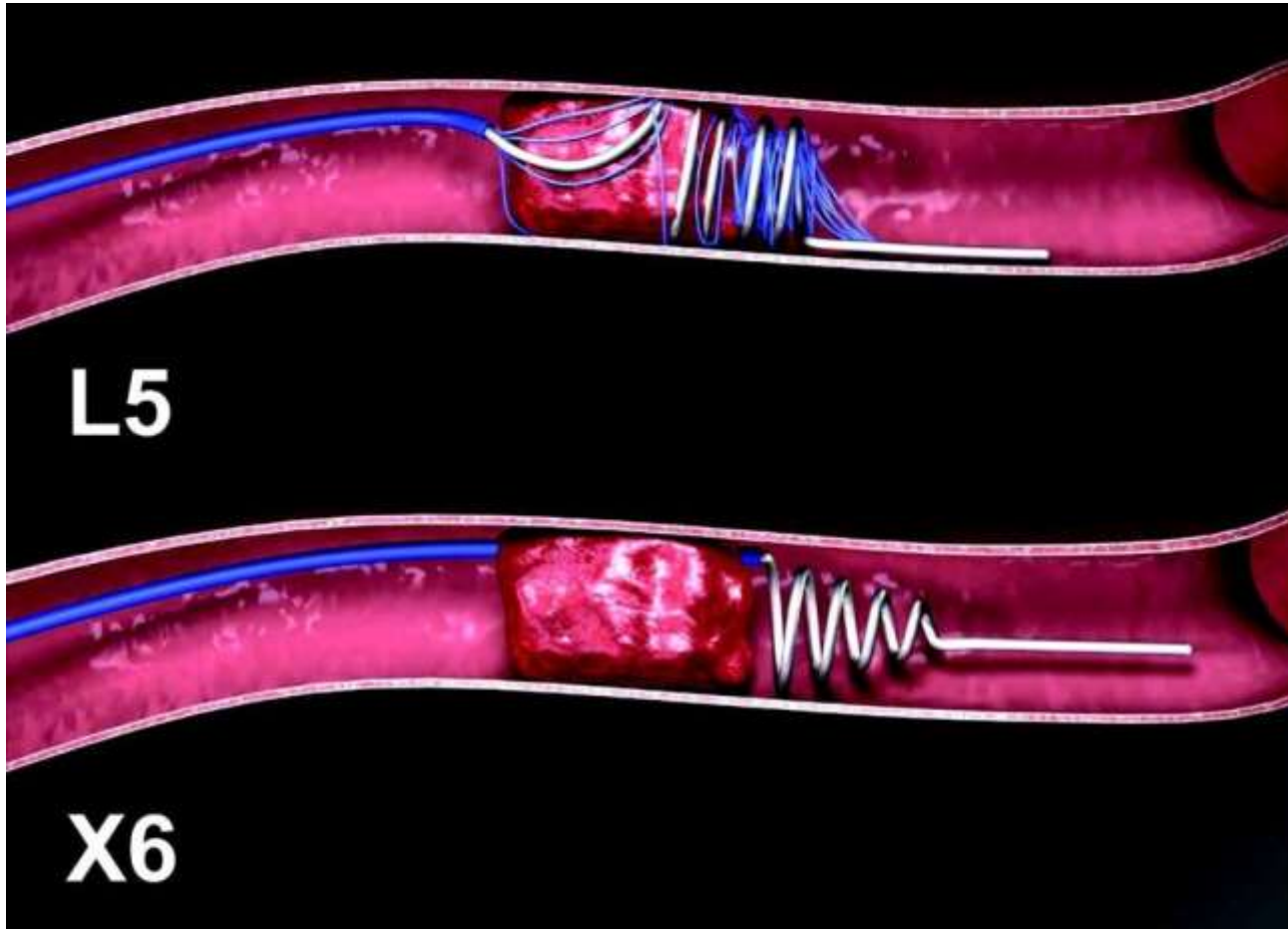
Brain stem stroke

- treatment can be delivered within 12 h of symptom onset and
- Occlusion of basilar artery documented on 4-vessel angiography
- Eligible even if consciousness impaired and or patient ventilated

Shaltoni et al 2007, Arnold et al 2002, 2003, Hill et al 2002

Endovascular Tools for Stroke Treatment

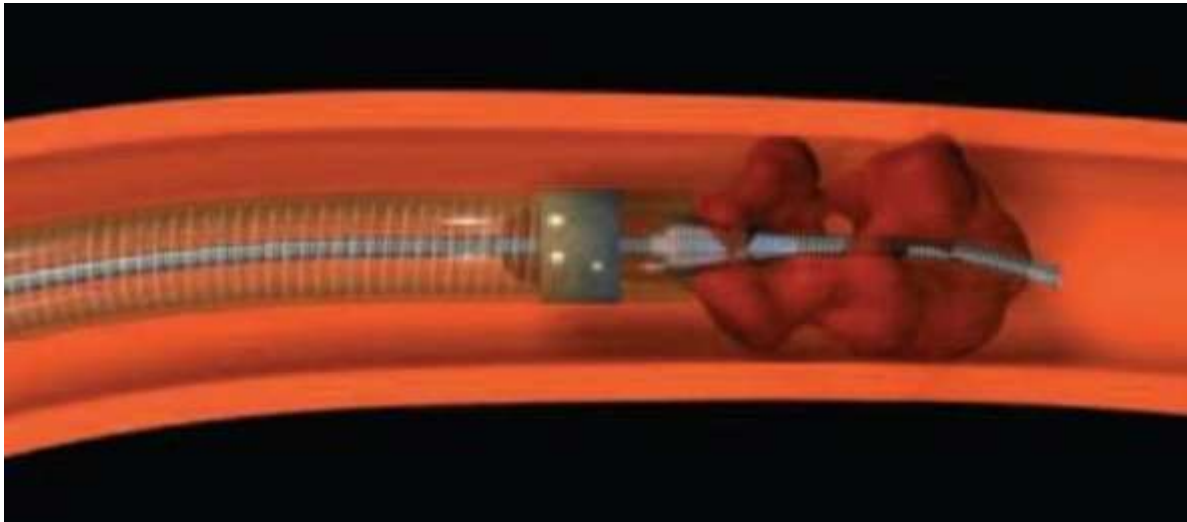
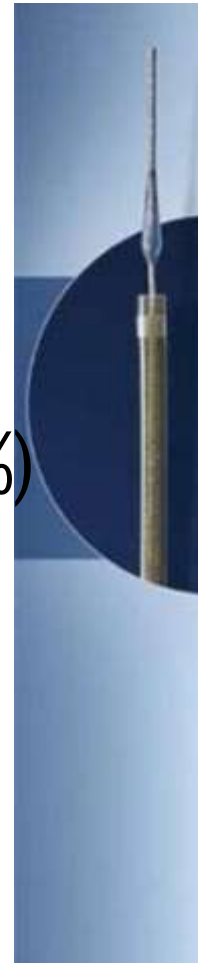
Merci[®] Retriever



Endovascular Tools for Stroke Treatment

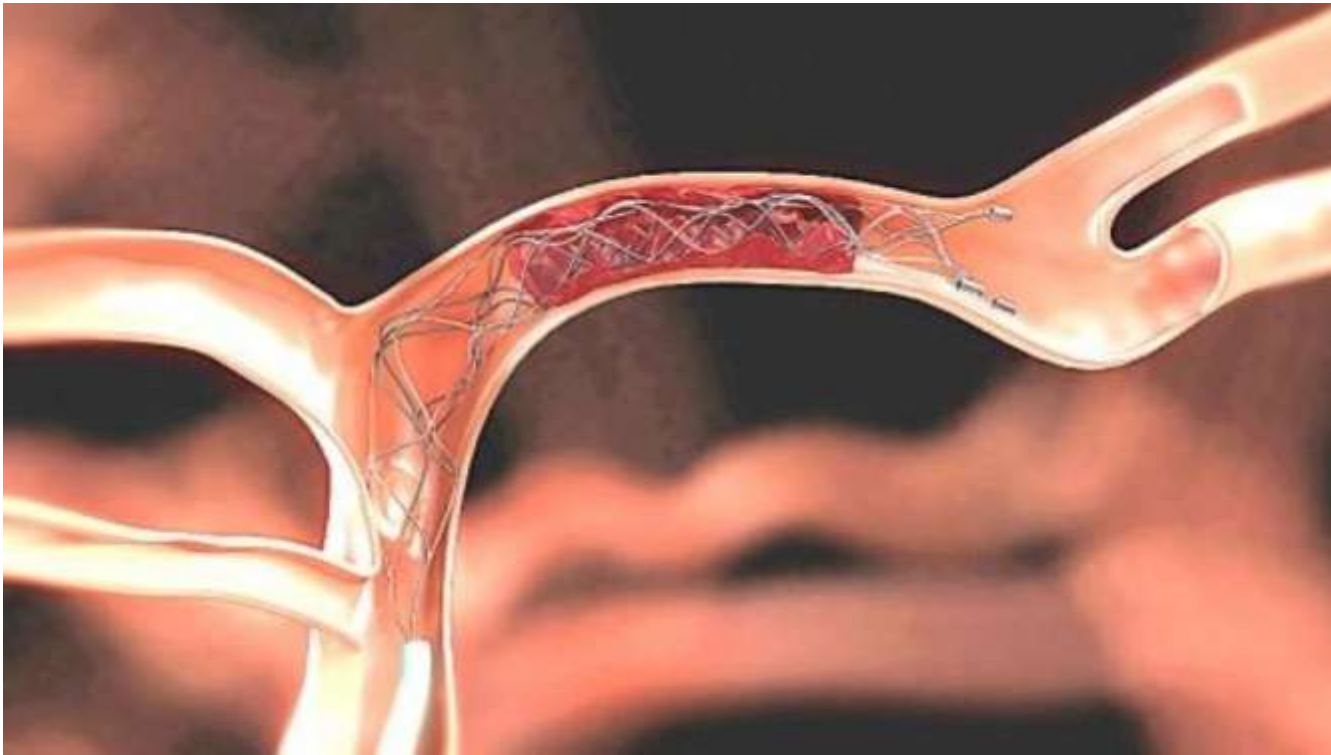
Penumbra[®] Stroke Device

- Stroke device for mechanical thrombectomy
- Higher rates of recanalization (~80%)



Solitaire[®] – Stent Retrieval Dev

- Recanalization rates approaching 90%



Stroke Recovery







- 10% of stroke survivors recover almost completely
- 25% recover with minor impairments
- 40% experience moderate to severe impairments requiring special care
- 10% require care within either a skilled-care or long-term care facility
- 15% die shortly after the stroke

ICH Post Thrombolysis

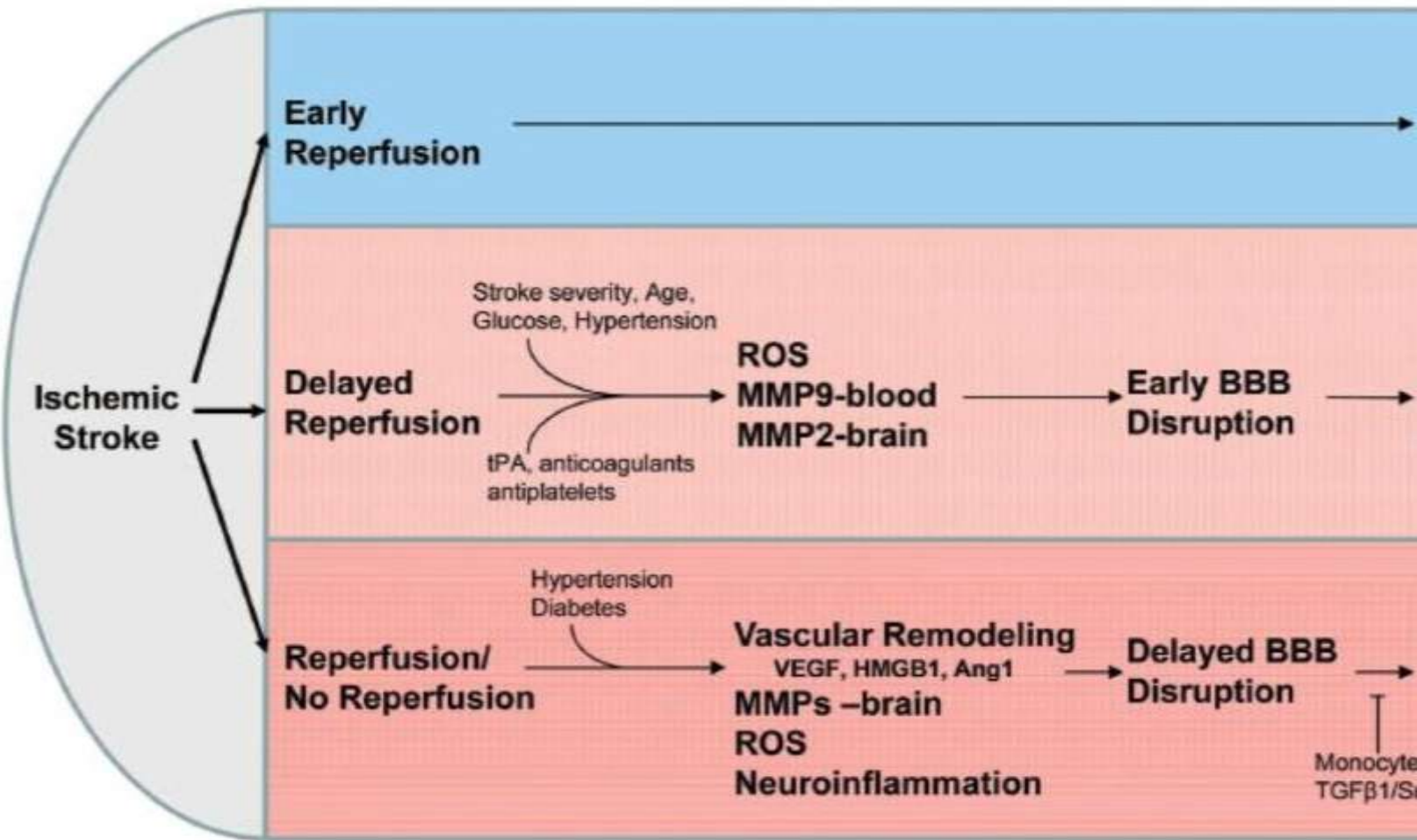
- ICH is the most feared complication of Thrombolysis—imp the generalization of thrombolytic therapy.

ICH Post Thrombolysis - Classification

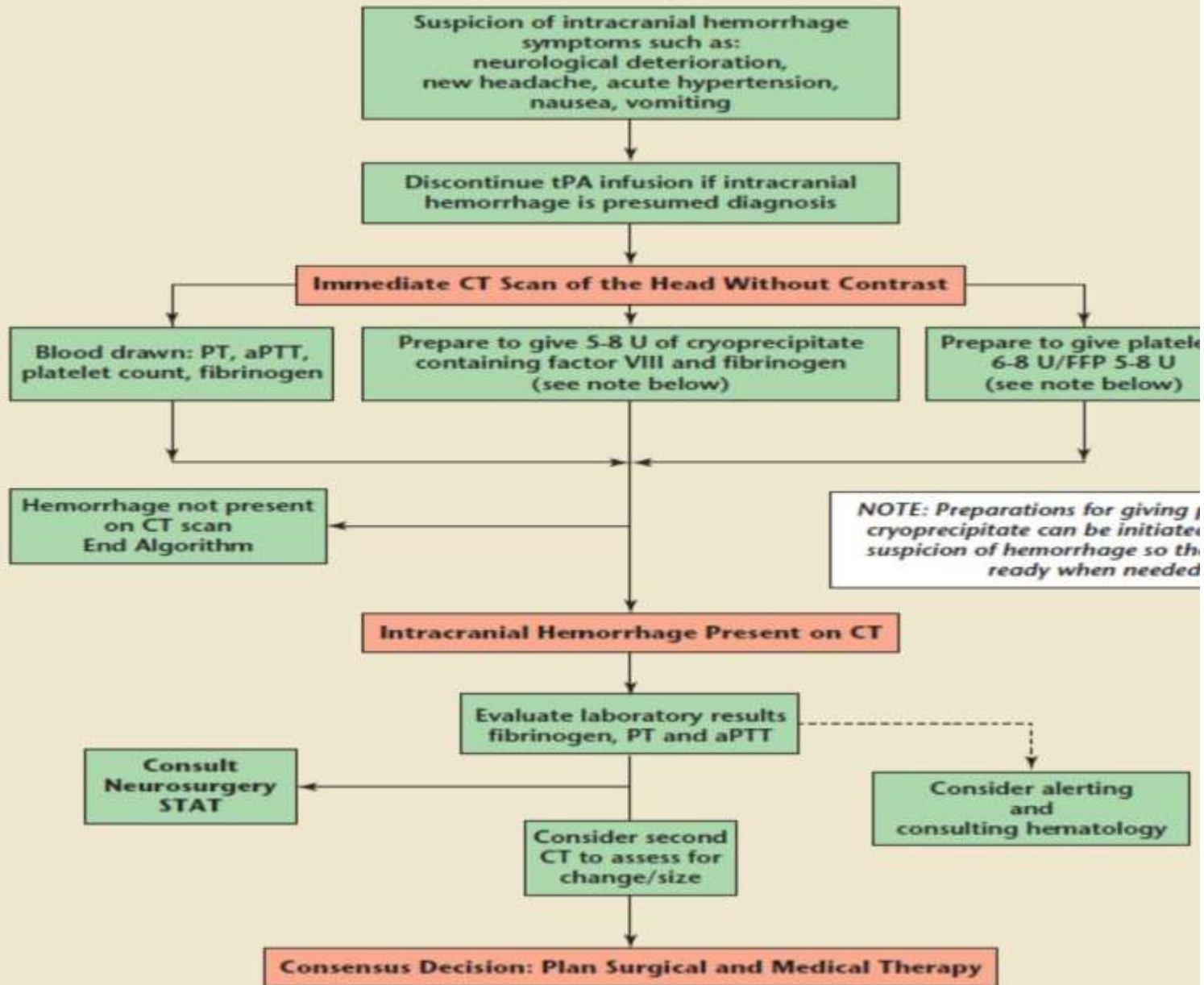
TABLE 1. Anatomic–Radiological Definitions of Cerebral Bleedings in NINDS and the ECASS Studies

	NINDS definitions
	HI: acute infarction with punctate or variable hypodensity/hyperdensity, with an indistinct border within the vascular territory
	PH: typical homogeneous, hyperdense lesion with a sharp border with or <i>without</i> edema or mass effect
	ECASS (1 and 2) definitions
	HI: petechial infarction without space-occupying effect
	HI1: small petechiae
	HI2: more confluent petechiae
	PH: hemorrhage (coagulum) <i>with</i> mass effect
	PH1: <30% of the infarcted area <i>with</i> mild space-occupying effect
	PH2: >30% of the infarcted area <i>with</i> significant space-occupying effect

What are the possible causes Hemorrhagic Transformation (HT) in patients with Stroke?



Intracranial Hemorrhage Following Initiation of Thrombolytic Therapy for Acute Stroke Algorithm



SAH

- What is it?
 - Bleeding into the subarachnoid space (space between pia & arachnoid meningeal layers) where blood vessels & CSF flows.
- Where does the blood come from?
 - An aneurysm on a blood vessel in the subarachnoid has ruptured (~70%)
 - Unknown (~15%)
 - AVM (~10%)
 - Rare causes (e.g. tumour) (~5%)
- Where does the blood go?
 - Anywhere where CSF goes, may get hydrocephalus if ventricle & causes obstruction of CSF circulation

SAH – The Problem

- They occur in young people
 - 80% in 40–65 year olds
 - 15% in 20–40 year olds
- It can kill quickly
 - 25% die within 24 hours
 - 50% will be dead at 6 months
- It causes significant disability
 - Cognitive impairment
 - Neurological disability depending on size of bleed & complications encountered

Treatment

- Main aim is damage control – want to pre further bleeding & try to avoid the complications that SAH patients get
- SAH patients will vary greatly from GCS 15 to GCS 3/15

To coil or clip?

- Coiling

- Endovascular technique done in angiography by interventional radiologists under GA
- May be best if small necked aneurysm
- Used in particularly sensitive areas e.g. basilar tip
- Must be able to access the aneurysm (e.g. any stenosis or tortuous vessels)
- Like dome:neck ratio to be 2:1 or greater

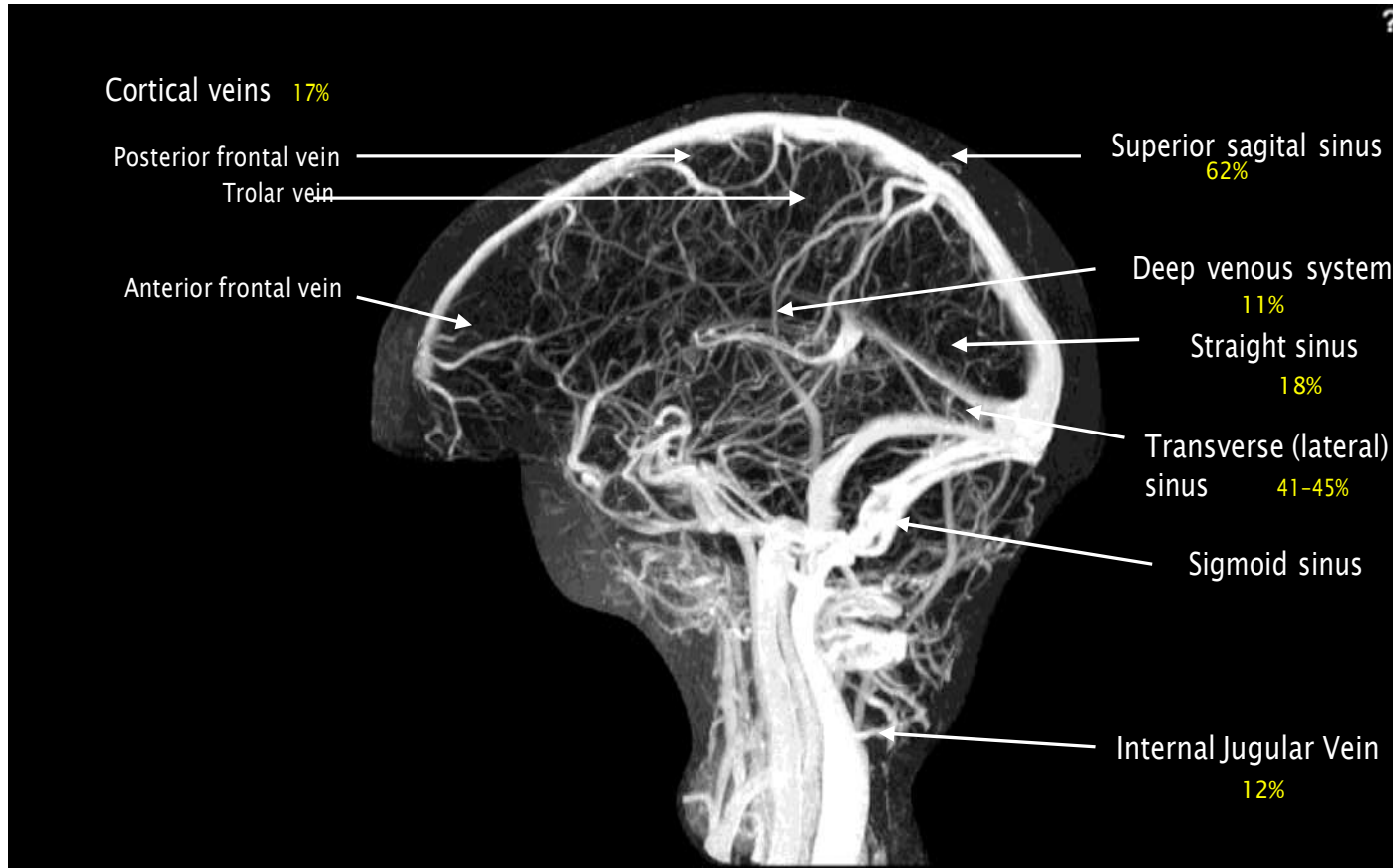
- Clipping

- Craniotomy & careful dissection using micros to reach aneurysm & clip usually at neck
- May be performed after failed clipping
- If aneurysm can't be re by the endovascular route

CVT(Cerebral Venous Sinus Thrombosis)

- CVT is an uncommon and frequently unrecognized type of stroke that affects about 5 people per million annually and accounts for 0.5-1% of all strokes
- CVT is more commonly seen in young individuals
- According to the largest cohort study [International Study on Cerebral Venous and Dural Sinuses Thrombosis (ISCVT)], 487/624 (78%) occurred in patients younger than 50

CVT location



Treatment

- Anticoagulation
- Fibrinolysis
- Surgical thrombectomy

Prognosis

- Mortality 5.6% during hospitalization
- Mortality 50% in children
- 88% have total or near complete recovery
- Rate of recurrence 2.8%

Types of Stroke Rehabilitation

Physical Therapy (PT)

- Walking, range of movement

Occupational Therapy (OT)

- Taking care of one's self

Speech Language Therapy

- Communication skills, swallowing, cognition

Recreational Therapy

- Cooking, gardening

Life Changes for Stroke Survivor and Family

- Daily living skills
- Dressing and grooming
- Diet, nutrition and eating difficulties
- Skin care problems
- Pain
- Sexuality/Intimacy
- Behavior
- Depression & Anger
- Emotional Liability
- One-sided Neglect
- Memory Loss
- Communication Prob

Stroke Prevention

1. Know your blood pressure. Have it checked at least annually. If it is elevated, work with your doctor to control it.
2. Find out if you have atrial fibrillation (AF) type of irregular heartbeat. If you have it, work with your doctor to manage it.
3. If you smoke, stop.

Stroke Prevention (continued)

4. If you drink alcohol, do so in moderation.
5. Know your cholesterol number. If it is high work with your doctor to control it.
6. If you are diabetic, follow your doctor's recommendations carefully to control your diabetes.

Stroke Prevention (continued)

7. Include exercise in your daily routine
8. Enjoy a lower sodium (salt) and lower fat diet
9. If you have circulation problems, work with doctor to improve your circulation.
- 10. If you experience any stroke symptoms, call 108(ambulance) immediately. **Every minute matters!****

YOU Can Reduce the Impact of Stroke

**Stroke is a Brain Attack
and is often preventable and treatable**

Remember the 3 R's of Stroke and Act FAST

- Reduce Risk
- Recognize Stroke Symptoms
- Respond immediately: Call 108 (ambulance)

Every minute matters!

Email: neuroguru7@gmail.com