

What is a stroke? The medical aspects

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STROKE ALERT NURSE

Agenda

- Introduction
- Diagnosis
- Classification
- Risk Factors
- Secondary Prevention
- Summary
- Questions?

History

Pasteur had a stroke which led to a coma and almost death, with his left leg paralysed and his left arm bent and useless, he continued in his laboratory for another 25 years and **founded the science of immunology**



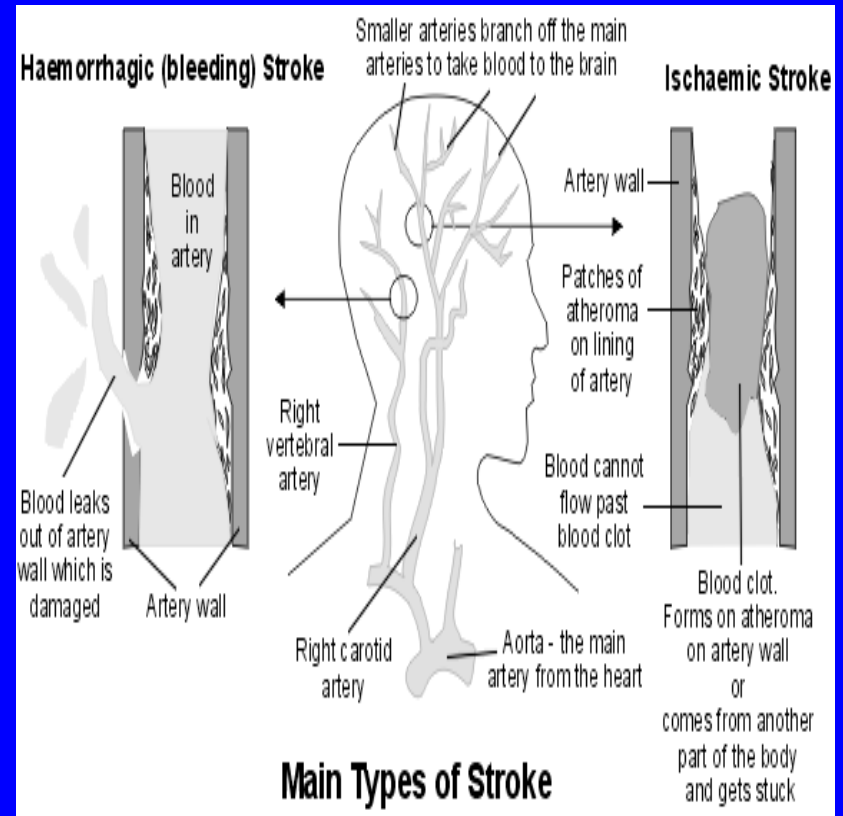
Brain attack!

- Acute stroke = “brain attack”
- Stroke is the brain equivalent of heart attack
- Every minute matters : “time is brain”
- A stroke is as serious as a heart attack
- Most people who experience a stroke survive
- **Do not use the term “CVA”**



What is a stroke?

- An interruption to normal flow of blood within the brain
- **Ischaemic stroke** (cerebral infarct) – blockage in an artery caused by a blood clot
- **Haemorrhagic stroke** (cerebral haemorrhage) – bleeding from an artery caused by a blood vessel bursting



FAST Campaign

WHEN STROKE STRIKES, ACT F.A.S.T.

FACE.
HAS THEIR FACE FALLEN ON ONE SIDE?
CAN THEY SMILE?

ARMS.
CAN THEY RAISE BOTH ARMS AND KEEP THEM THERE?

SPEECH.
IS THEIR SPEECH SLURRED?

TIME.
TIME TO CALL **999**
IF YOU SEE ANY SINGLE ONE OF THESE SIGNS

NHS

F.A.S.T. is part of a national government campaign to raise awareness of the signs of stroke and promote quick response. It encourages people to call 999 immediately on detecting any one of these signs. This will help reduce the risk of death and disability.

As you know, the sooner someone exhibiting these signs receives urgent medical attention the better their chances of a good recovery.

In the case of ischaemic stroke, thrombolysis can clear blocked arteries to the brain more effectively if administered within three hours of onset.

In haemorrhagic stroke F.A.S.T. action also improves chances of recovery, as patients benefit from specialist treatment, including CT scan and early diagnosis.

If you would like more information on the Act F.A.S.T. campaign please visit nhs.uk/actfast

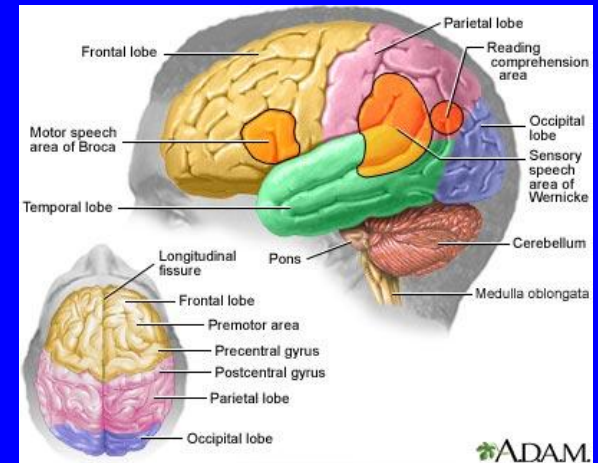
Two million nerve cells are lost every minute that stroke treatment is delayed

Diagnosis

Stroke is primarily a clinical diagnosis

Warning signs:

- Weakness or numbness in face, arm or leg
- Difficulty speaking or understanding
- Difficulty swallowing
- Sudden confusion
- Severe headaches
- Dizziness or loss of balance
- Sudden blurred or decreased vision
- Sudden change of mental ability



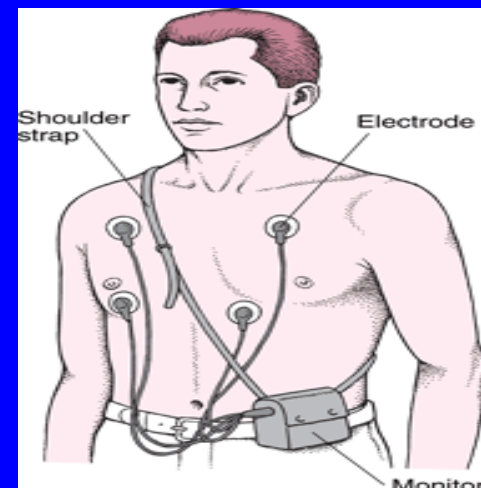
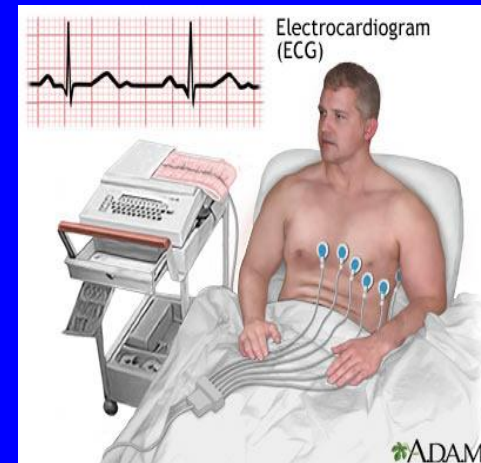
Investigations

- Blood tests – FBC, U&Es, LFT, TFT, blood glucose & cholesterol
- HbA1c & urine for Alb/Cre ratio (if diabetic)



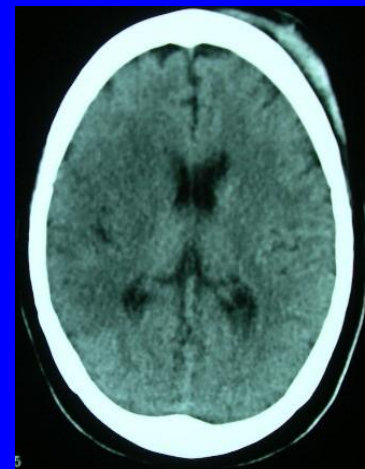
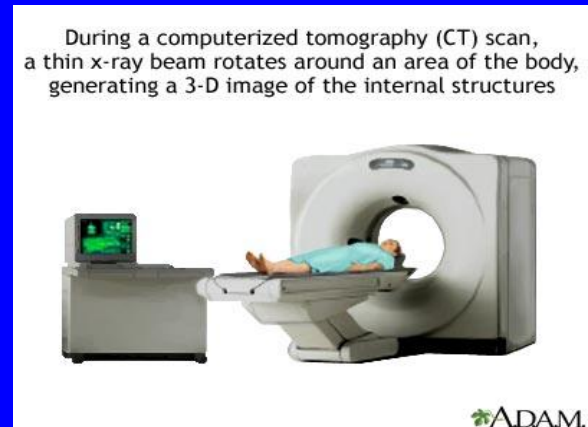
Investigations

- **ECG**
- **24 Hour ECG**
- To detect abnormal heart rhythm or an **irregular heart beat** – there is a chance that a clot can form in the heart and this clot moves to the brain to cause a stroke.
- This rhythm disturbance is commoner as one gets older



Investigations

- **CT scan** – this is a special type of x-ray scan of head to determine if a stroke has occurred and to determine whether the stroke is due to a **bleed** or a **blockage**



Infarct



Haemorrhage

Investigations

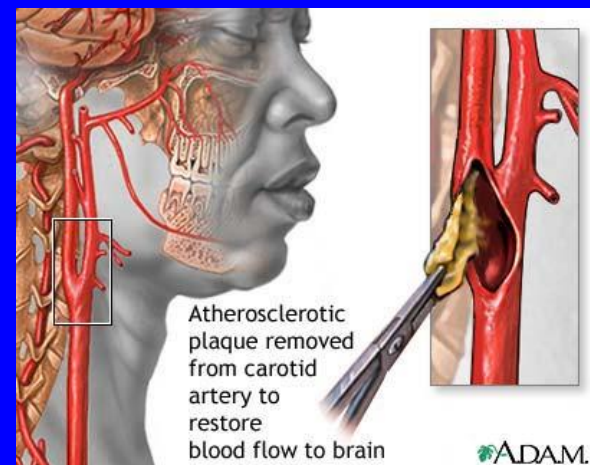
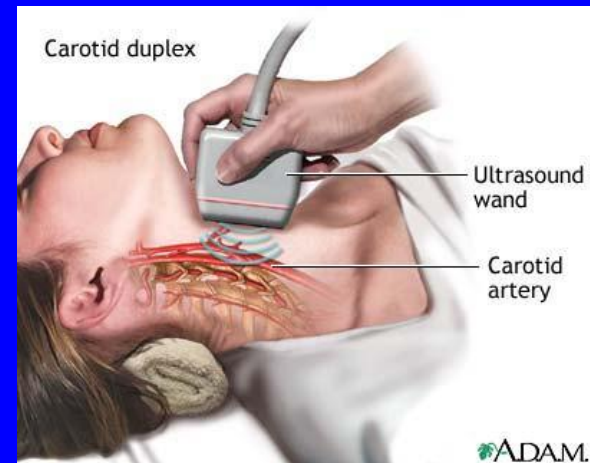
- **MRI (Magnetic Resonance Imaging)**
– can be done as an alternative to a CT scan
- It takes longer to do than a CT scan

During magnetic resonance imaging (MRI), a narrow table moves the patient through a tunnel-like structure. Inside the structure, radio waves pass through a magnetic field around the patient, creating a 3-D image of the internal structures.



Investigations

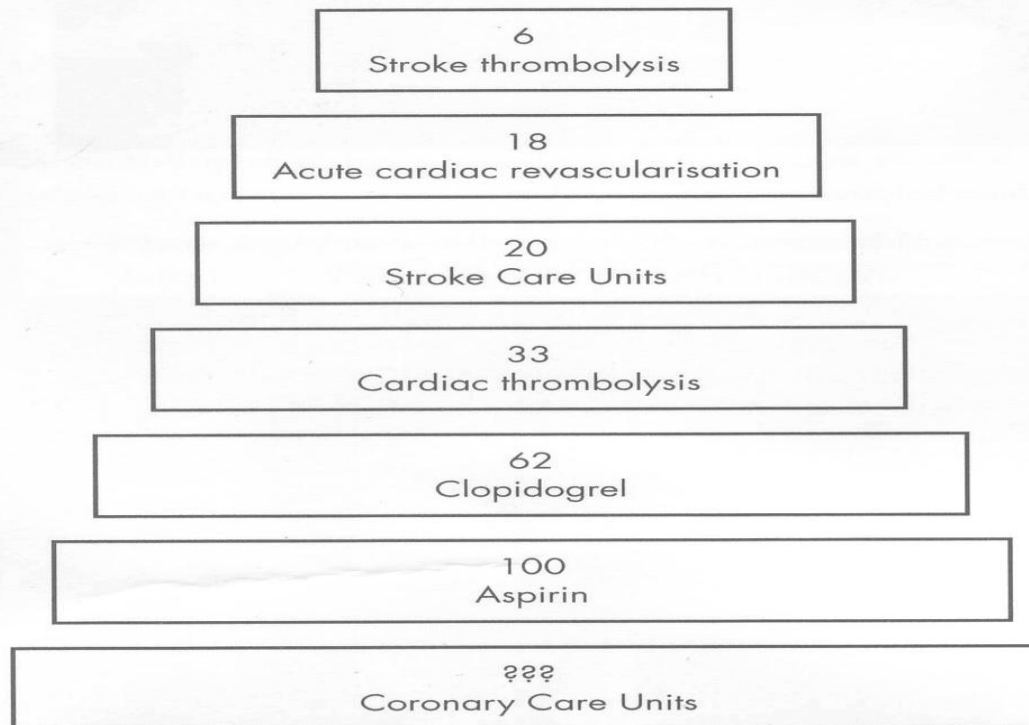
- **Doppler of the carotid arteries-** a special scan of the blood vessels (carotid arteries) on either side of the neck. It shows “furring” or narrowing . If narrowing is severe, the patient may be referred to a surgeon for an operation to widen the artery. This is called a **carotid endarterectomy**



Do treatments for stroke work?

5

Numbers that need to be treated to benefit one patient



Source: Slide from Chris Bladin's presentation at the NAO conference (19th October 2006)

Stroke units

Organized Stroke Care Saves Lives

- 21% reduction in early mortality
- 18% reduction in 12 month mortality
- Decreased length of hospital stay
- Decrease institutionalisation by 30%

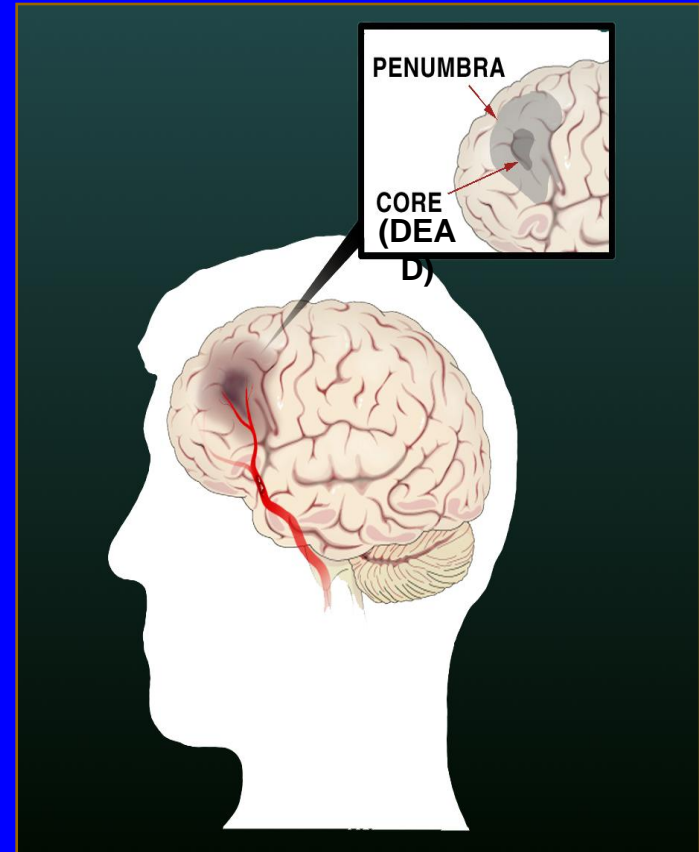
Source: [Jorgenson, Stroke, 1994](#)



Acute Stroke Unit

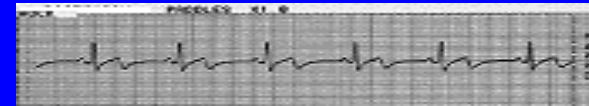
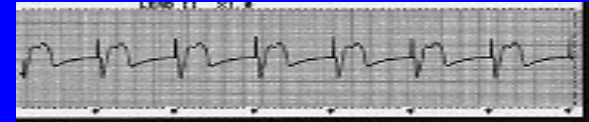
Thrombolysis or “clot” busting treatment

- The occlusion of an intracranial artery leads to ischaemia and then infarction of the brain tissue
- Prompt administration of drugs that can break down thrombus could restore blood supply, thereby reducing the damage to the brain



Story....

Pre-thrombolysis



ECG – pre & post thrombolysis

Post-thrombolysis



A consultant remarked – for MI patients I saw only ECG changes but here I can see that I have reduced the physical disability by thrombolysing a stroke patient!

Non-modifiable risk factors

- Age
- Gender
- Ethnic group
- Previous stroke
- Family history of stroke

Modifiable risk factors

- Smoking
 - Alcohol excess
 - Diet & Obesity
 - OCP
 - Physical exercise
- High blood pressure
 - Diabetes Mellitus
 - Atrial fibrillation
 - Hypercholesterolaemia
 - Carotid artery disease

Secondary Prevention (non-pharmacological)

- Cigarette smoking should be discouraged and smoking cessation advice given
- Heavy use of alcohol should be discouraged
- Regular physical activity is recommended
- A low salt, low saturated fat, high fruit and vegetable, fibre-rich diet is recommended

Secondary Prevention- (Pharmacological)

- Hypertension is the greatest treatable risk factor
- Systolic and diastolic are both factors
- BP should be below 140/85 mmHg
- <130/80 in diabetics
- The majority of patients need a combination of drugs

Secondary Prevention- (Pharmacological)

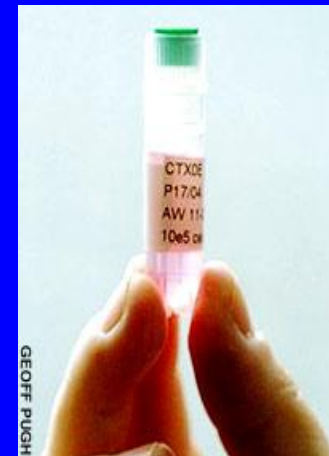
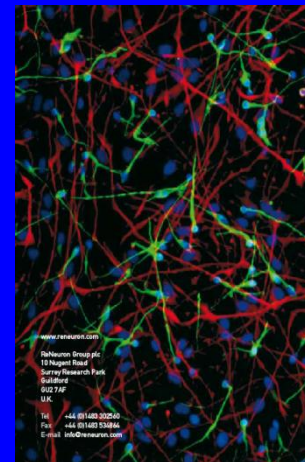
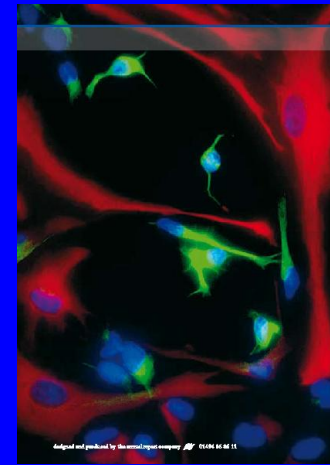
- Aspirin or modified release dipyridamole (16.3%) or Clopidogrel (7.3%)
- Aspirin + Dipyridamole MR (37%)
- AF (warfarin - 68%, Aspirin – 21%)
- Statins (20-30%)/Ezetimibe (Ezetrol)
- Diabetes – (44% risk reduction with tight BP & BM control; aim BM – 4 to 10, HbA1c <7%)
- Surgery (stenosis >70%, good recovery from ischaemic stroke, surgery offered in 6/12)

When can I start driving again?

- Refrain from driving for a month
- You do not have to notify the DVLA unless there is a neurological deficit e.g. visual field defects, cognitive defects or impaired limb function
- **Special rules apply to Group 2 users** (lorries, buses and minibuses)
- **Neurosurgical operation** – 6-12 months off driving
- **Frequent TIAs or minor stroke** – 3-month period free from attacks
- **You should see your doctor before starting to drive**
- **Your insurance company must be informed about your stroke or TIA**
- It is possible to have adaptations made to your car
**(REGIONAL DRIVING ASSESSMENT CENTRE
08453371540)**

Advances in treatment?

- Stem cell therapy for stroke?
- It allows new nerve cells to grow or regeneration of existing cells and actual recovery of function
- **ReNeuron's ReN001**



A vial containing brain stem cells produced by ReNeuron's cloning technique

Summary

- There are two types of stroke – Ischaemic & haemorrhagic
- Good evidence that stroke units and thrombolysis reduces length of stay, disability and placement in an institutional care
- Patients undergo investigations to establish the type of stroke and to address risk factors
- Stroke patients are prescribed medicines to prevent future strokes
- We should encourage them to lead a normal & safe life

**“If you don’t know where you’re going
you won’t know how to get there”**

Mark Twain

Thank you