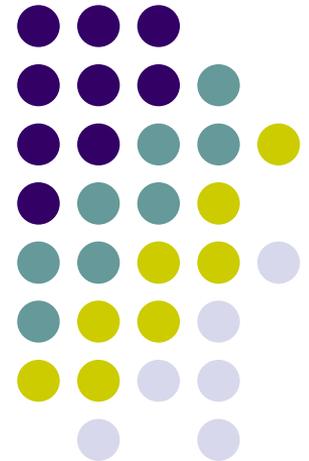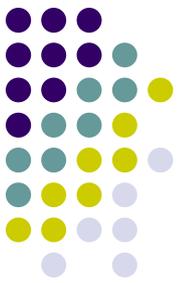# Secondary Prevention of Stroke

Maria Fitzpatrick

Consultant Nurse

Stroke Management

Kings stroke centre

Stroke Definition

Stroke has been defined as a rapid onset of focal neurological deficit lasting more than 24 hours, with no apparent cause other than disruption of the blood supply to the brain (World Health Organization1989

A transient ischaemic attack (TIA) refers to a similar presentation that resolves within 24 hours(Hankey and Warlow, 1994).

Stroke the facts
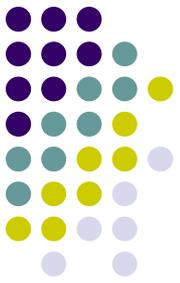
- Every 5 mins someone has a stroke

- Stroke is the leading cause of long term disability in the uk

- 1 in 4 and 1 in 5 women aged 45 will have a stroke if they live to approx 80

- 3 times as many women die from stroke than breast cancer

- For every £50 spent on cancer research and £20 on heart disease £1 is spent on stroke research

# Incidence of stroke and transient ischaemic attack (TIA)

- Each year in England and Wales: Over 150,000 people have a stroke.

- There are 87,700 first strokes and 53,700 recurrent strokes

- 25% of strokes occur in people aged under 65 years.

- 35 people out of every 100,000 each year have a TIA.

- 10–20% of those who have had a TIA will go on to have a stroke within a month & the greatest risk is within the first 72 hours.

- 250,000 people live with stroke disability in the UK
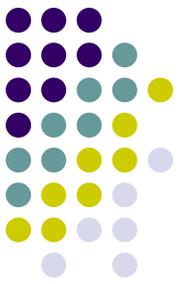
Mortality

- Stroke causes over 60,000 deaths each year in the UK

- stroke caused 8% of deaths in men and 12% of deaths in women in the UK (approx)

- In those aged under 75, stroke caused 5% of deaths in men and 6% of deaths in women in the UK

Stroke costs
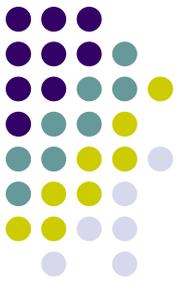
- Stroke care costs the NHS approximately:
- £2.8 billion a year in direct care costs
- £1.8 billion in lost productivity and disability
- £2.4 billion and informal care costs
- A total of around £7 billion per year
- One in five acute hospital beds and a quarter of long term beds are occupied by stroke patients
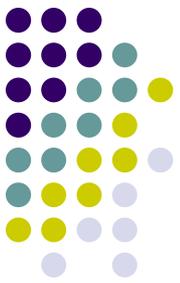
Stroke recurrence

- The risk of recurrent stroke is greatest early after the first stroke; about 2–3% of survivors of a first stroke have another stroke within the first 30 days, about 9% in the first 6 months and 10–16% within a year.

- This is about 15 times greater than the risk in the general population of the same age and sex.

- After the first year, the average annual risk of recurrent stroke for the next 4 years falls to about 5%.

Stroke secondary prevention trials
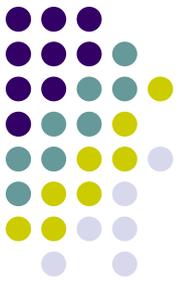
- Progress
- Match
- Cure
- Caprie
- Sparcl
- Blood Pressure Lowering Treatment Trialists' Collaboration
- Cochrane reviews

Northwick Park Hospital

Queen's Hospital

University College Hospital

The Royal London Hospital

Charing Cross Hospital

King's College Hospital

St George's Hospital

The Princess Royal University Hospital

● Hyper acute stroke unit

Number of beds

- **North Central: 18**
- **North East: 24**
- **North West: 36**
- **South West: 20**
- **South East: 22**
- **120 beds for HASU and 510 beds for S.U care**

Risk factors

- Age: There is increased risk for stroke after 55 years.
- Race - more common in African Americans than Caucasians.
- Previous stroke
- Migraine
- Previous TIA (transient ischemic attacks)
- Family history of stroke
- Use of oral contraceptives.
- Heavy alcohol consumption
- High blood cholesterol levels
- Illicit drug use like cocaine.
- Menopause.
- High blood pressure: It is the most common risk factors for stroke.
- Heart disease such as atherosclerosis.
- Diabetes.
- Inactivity and lack of exercise.
- Obesity.
- Cigarette smoking.
- High red blood cell count will cause thickness of blood leading to clot formation and stroke
- Atrial fibrillation, an abnormal heart rhythm.
- Socioeconomic status: Stroke is more common in people with low socioeconomic status.
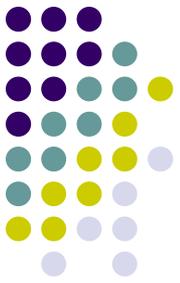
Modifiable risk factors

- High cholesterol

- High blood pressure

- Being over weight

- Excessive alcohol

- Smoking

- Poor diet

- Lack of physical activity

Non-Modifiable risk factors
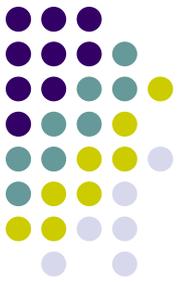
- Advancing age: most powerful independent risk factor.

- Male gender: also higher risk of coronary heart disease among men compared with women.

- Heredity or family history: increased risk if a first-degree relative has had coronary heart disease or stroke before the age of 55 years (for a male relative) or 65 years (for a female relative).

- Non-white ethnicity or race: increased stroke in Blacks, some Hispanic Americans, Chinese, and Japanese populations. Increased cardiovascular deaths in South Asians and American Blacks in comparison with Whites.

- Previous history of TIA and/or stroke.
- Clotting disorders
- Heart disorders
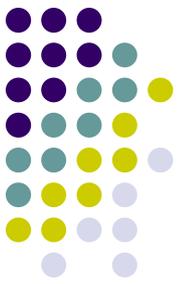
Stroke and ethnicity

	Men %	Women %
Black	3.2	0.8
Indian	2.5	0.7
Pakistani	0.7	0.6
Bangladeshi	1.2	0.4
Chinese	0.7	0.2
Irish	2.0	2.0
General population	2.3	2.1

High blood pressure
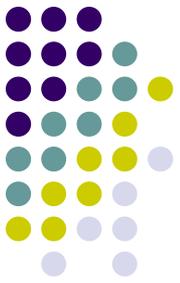
- High blood pressure is the most important treatable and causal risk factor for stroke.

- A meta-analysis of data from nine randomized controlled trials on the effects of blood pressure lowering drugs in 6752 survivors of stroke estimated a reduction in the relative risk of recurrent stroke of 29% (95% confidence interval: 5–47%) (Gueyffier et al, 1997). **Treatment of High Blood Pressure and Gain in Event-Free Life Expectancy**

Control targets
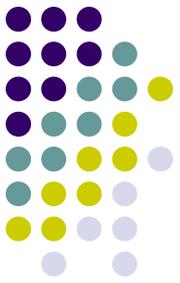
- 0ptimal target BP for patients with established cardiovascular disease is 140/85mmHg for patients known to have bilateral severe (>70%) internal carotid artery stenosis a slightly higher target (eg systolic BP of 150 mmHg) may be appropriate.
- In hypertensive patients aged 55 or older or black patients of any age, the first choice for initial therapy should be either a calcium-channel blocker or a thiazide-type diuretic. (For this recommendation, black patients are considered to be those of African or Caribbean descent, not mixed-race, Asian or Chinese.)
- In hypertensive patients younger than 55, the first choice for initial therapy should be an angiotensin-converting enzyme (ACE) inhibitor (or an angiotensin-II receptor antagonist when ACE inhibitor is not tolerated).
- PROGRESS Study (Ischaemic & Haemorrhagic strokes)
  - Indapamide 2.5mg OM (Thiazide diuretic)
  - Perindopril 8mg

-
RCP. National Clinical Guideline for stroke. 3rd edition, July 2008
NICE Hypertension CG 34, June 2006 SIGN Guideline No. 108, Dec 2008
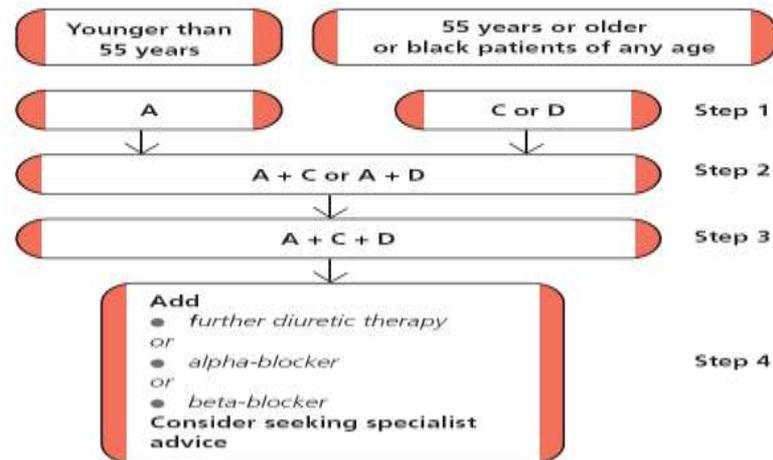
High Blood pressure management
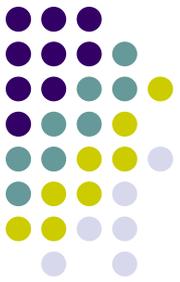
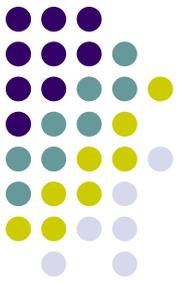Choosing drugs for patients newly diagnosed with hypertension

Abbreviations:
A = ACE inhibitor
(consider angiotensin-II receptor antagonist if ACE intolerant)
C = calcium-channel blocker
D = thiazide-type diuretic

Black patients are those of African or Caribbean descent, and not mixed-race, Asian or Chinese patients

Younger than 55 years	55 years or older or black patients of any age	
A	C or D	Step 1
A + C or A + D		Step 2
A + C + D		Step 3

Add
- further diuretic therapy
or
- alpha-blocker
or
- beta-blocker
Consider seeking specialist advice

Step 4

BHS

NHS
National Institute for
Health and Clinical Excellence

Overall benefits in BP control

- 33-46% reduction in fatal or disabling stroke
- 50-76% reduction in the risk of cerebral haemorrhage
- 38-42% reduction in non- myocardial infarction fatal

- All benefits achieved against a background of standard care that included antiplatelet and antihypertensive therapy

Aspirin

- For every 1, 000 people with prior stroke/TIA treated with aspirin for 3 years, the treatment Reduces risk of death / recurrent stoke

- Early by 9/1000

- Later by 13/1000

- Prevents about 1 in 7 future events.

Anti-platelets
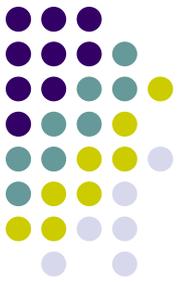
- Aspirin and dipyridamole should be the standard secondary prevention treatment following ischaemic stroke NICE 2006

- The daily dose of aspirin should be 300 mg aspirin (2 wks) and dipyridamole MR 200 mg bd.

- For patients who are intolerant of aspirin, clopidogrel 75 mg once daily is a suitable alternative.

- Addition of a proton pump inhibitor should only be considered when there is dyspepsia or other significant risk of gastrointestinal bleeding associated with aspirin, to allow aspirin medication to continue.

Anticoagulation NICE 2008
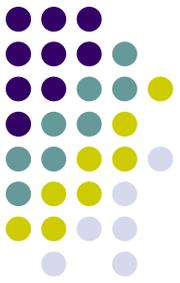
- Anticoagulation Should be recommended in every patient with persistent or paroxysmal atrial fibrillation (15% of all strokes) (valvular and non-valvular) unless contraindicated should not be started (after cerebral events) until brain imaging has excluded haemorrhage,and not usually until 14 days have passed from the onset of disabling ischaemic stroke should. N.b not be used for patients in sinus rhythm unless a major cardiac source of embolism has been identified.
- reduces the relative risk of stroke by 70%
- Pulse check is not part of the QOF for GP
- Issues with compliance, blood tests and suitable pts
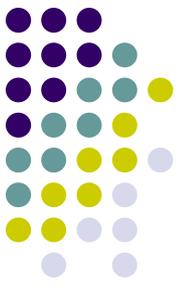
Smoking

- Smoking has been shown to be associated with a doubling of risk among smokers compared with non smokers
- 12.5 million people smoke
- Risk of stroke is 2 to 4 times the risk in non smokers
- 5 yrs after stopping smoking the risk is reduced to that of a non smoker
- Ensure follow up information given

Lipid control
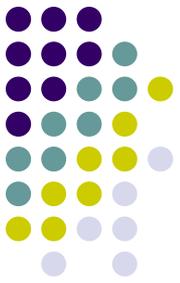
- All patients who have had an ischaemic stroke or transient ischaemic attack should be treated with a statin drug unless contraindicated, according to the following criteria

- a total cholesterol of >3.5 mmol/L, or

- LDL cholesterol >2.5 mmol/L.

- The treatment goals should be: total cholesterol <4.0 mmol/L and LDL cholesterol <2.0 mmol/L, or a 25% reduction in total cholesterol and a 30% reduction in LDL cholesterol, whichever achieves the lowest absolute value.

- Treatment with statin therapy should be avoided or used with caution (if required for other indications) in individuals with a history of haemorrhagic stroke, particularly those with inadequately controlled hypertension.

- Ensure pts are informed of potential side effects!

Alcohol
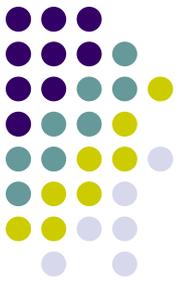
- There is strong evidence that chronic alcoholism and heavy drinking are risk factors for all stroke

- 27% of men and 17% of women consume more than the recommended weekly limits of alcohol (21 units for men and 14 units for women)

- There is a strong relation between heavy drinking and stroke: male drinkers of over 35 units a week have double the risk of mortality from stroke than non drinkers

Obesity
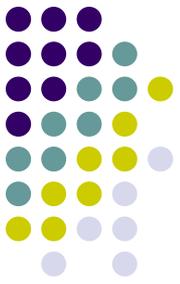
- Obesity, defined as a body mass index (BMI) of >30 kg/m2, has been established as an independent risk factor for CHD and premature mortality

- In a recent review of existing studies on physical activity and stroke, overall moderately or highly active individuals had a lower risk of stroke incidence or mortality than did low-activity individuals.
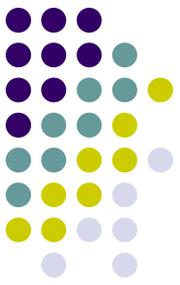
Diabetes Mellitus

- DM is frequently encountered in stroke 15%-33% >7mmols- fasting blood glucose and glucose tolerance test

- People with diabetes are 2 to 4 times more likely to have a stroke than people who do not have diabetes

- Aim for BM control

- Issues-compliance and diet

Carotid Artery Disease
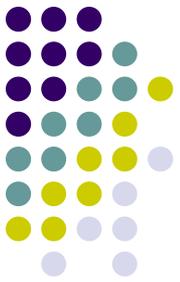
- Narrowing of the carotid arteries is commonly associated with stroke and transient ischaemic attack, and surgical intervention (including radiologically guided surgery and stenting) has been used in attempts to reduce both initial stroke and further stroke.

- Any patient with a territory TIA or stroke but without severe disability should be considered for carotid endarterectomy NICE 2008

- Carotid endarterectomy should be considered when carotid stenosis is measured at greater 70% as measured using the ECST(European Carotid Surgery Trial) methods, or 50% as measured using the NASCET (north American systematic) methods.

# Risk of stroke from carotid stenosis
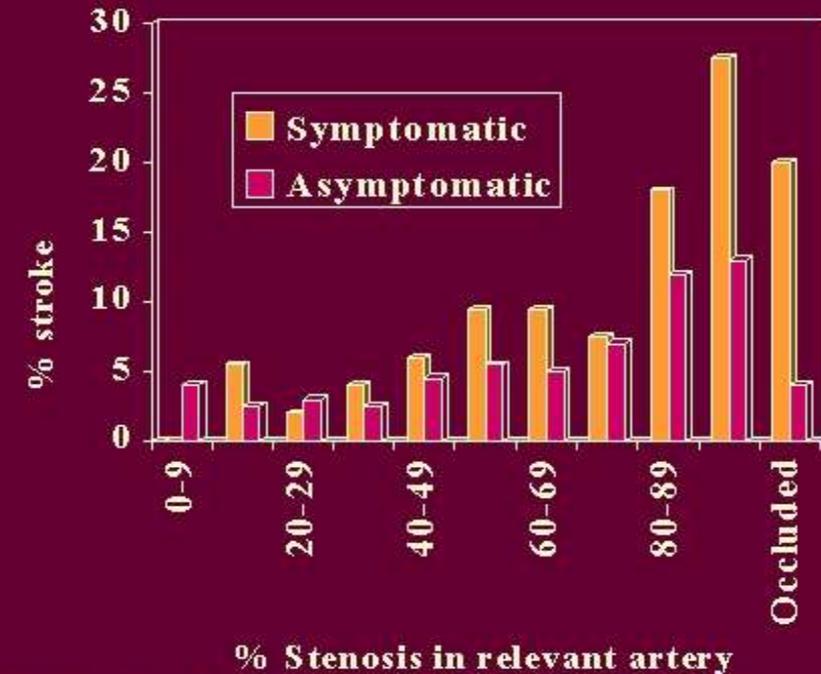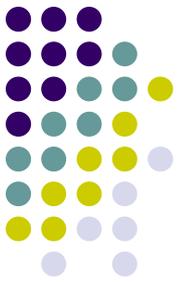
Risk of stroke rises with increasing degree of stenosis
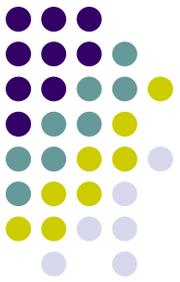
Issues on D/C

- Approximately 35% of patients are discharged home from a HASU.
- Taking on new information
- Health Beliefs – Conventional vs Alternative
- Polypharmacy – Pts may not have been on any previous medicines
- Aphasic pts
- Family involvement
- Consider formulation e.g. tablet size / liquids / capsules
- Swallowing ability –
- Eyesight – Do they require large labels?
- Dexterity – can they manage to Self-medicate?
  - Non-Child proof caps
  - Do they require a compliance aid? – Medication card/MDS Box
  - Reliance on carers
- Frequency of dosing – memory/cognition
- Drugs for dossette boxes
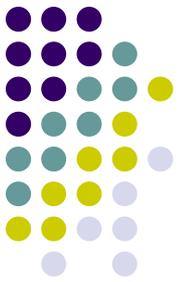
Cycle of change
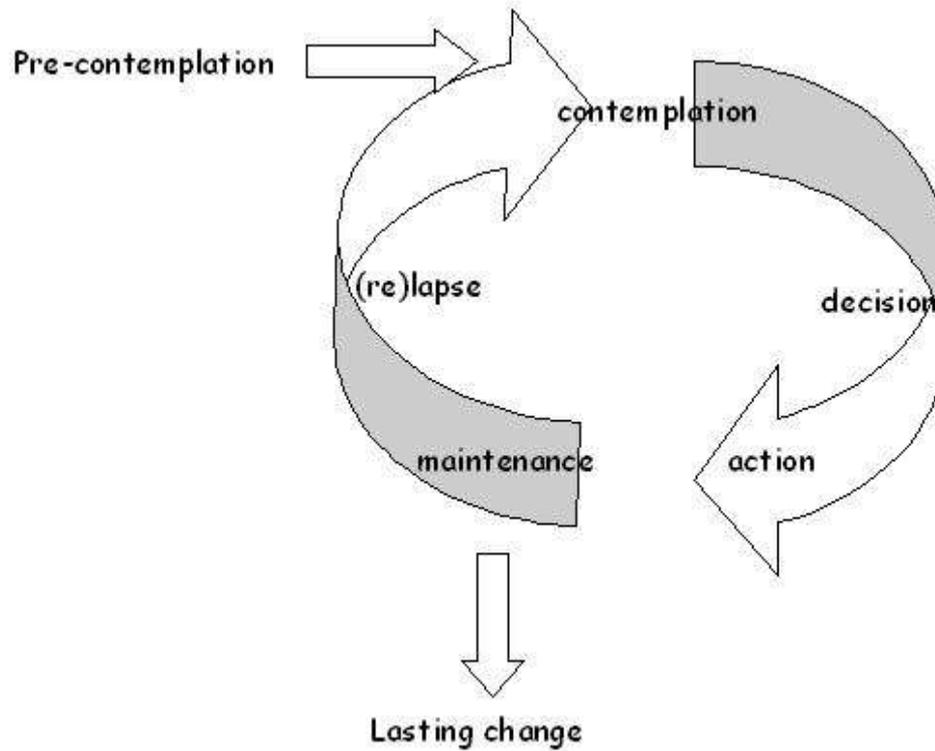
Cycle of change
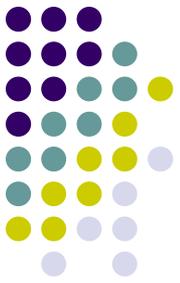
- In **contemplation** the person is ambivalent - they are in two minds about what they want to do. Sometimes they feel the need to change but not always.

- In **action** the person is preparing and planning for change. When they are ready the decision to change is made and it becomes all consuming.

- In **maintenance** the change has been integrated into the person's life. Some support may still be needed through this stage. In maintenance lasting change is learned, practised and becomes possible. When we are able to maintain what we have achieved we exit the cycle entirely.

Improving compliance

- IAMSS study
- No gold standard to measuring compliance
- 50% of chronic disease sufferers are not compliant with their medication
- Recognise there are intentional and non intentional adherence issues
- 2 30min sessions
- Use the stroke patient hand book
- Use check list for all patients

What to aim for

- Health ownership by----
- Good glucose control
- Controlling blood pressure or medication
- Eating a heart-healthy, low salt, low-fat diet rich in fruit, vegetables and whole grains
- Exercising daily to help lower cholesterol and control blood glucose levels
- Trying to achieve an ideal body weight
- Quitting smoking
- Keep taking the pills!

Resources
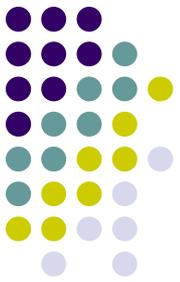
- www.exerciseafterstroke.org.uk
- www.Info.co.uk/StrokeResources
- www.RightHealth.com/Stroke
- www.stroke.org.uk/information
- www.stroke.org.uk
- www.smokefree.nhs.uk
- www.diabetesmellitus-information.com/diabetic_food.htm

references
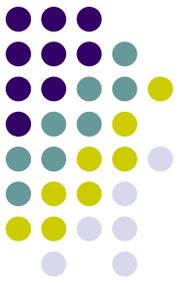
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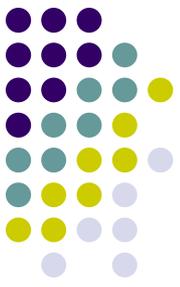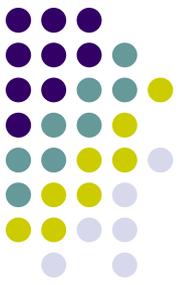
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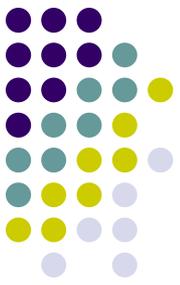
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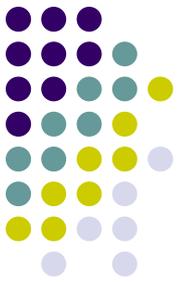
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