What’s new in secondary prevention of stroke

- TIA referral
- Carotid revascularisation
- BP management
- Paroxysmal AF
- Other risk factors
What’s new in secondary prevention of stroke – general points

• “I take a different approach than is recommended”
  – recommendations are statements to inform the clinician, not rigid rules

• “I don’t think this recommendation is appropriate for this particular patient”
  – the guideline does not attempt to cover all eventualities
Patients with acute neurological symptoms that resolve completely within 24 hours (i.e. suspected TIA) should be given aspirin 300 mg immediately and assessed urgently within 24 hours by a specialist physician in a neurovascular clinic or an acute stroke unit.

Patients with suspected TIA that occurred more than a week previously should be assessed by a specialist physician as soon as possible within 7 days.
What’s happened to ABCD2?

• Evidence for ABCD2 has largely been derived from selected (probable/definite TIA/stroke) populations.

• Even in selected populations ABCD2 does not identify some high risk individuals (e.g. 10-15% of those with ABCD2 <4 will have carotid stenosis >50%).

• About half of TIA clinic referrals do not have probable or definite TIA, 35-40% of whom will have ABCD2 ≥4.

• ABCD2 triage in routine clinical practice is likely to result in appreciable missed opportunities for stroke prevention and will prioritise some non-TIA/stroke cases.

Wardlaw et al, 2014
• Resulting challenges resulting from loss of the 7-day “buffer”:
  — more unpredictable day-to-day TIA clinic numbers
  — a need for greater flexibility in same-day imaging
Carotid endarterectomy for people with symptomatic carotid stenosis should be:

- the treatment of choice, particularly for people who are 70 years of age and over or for whom the intervention is planned within seven days of stroke or TIA;
- performed in people who are neurologically stable and who are fit for surgery using either local or general anaesthetic according to the person’s preference;
- performed as soon as possible and within 1 week of first presentation;
- deferred for 72 hours in people treated with intravenous thrombolysis;
Carotid stenting

Fourth edition 2012

E Carotid angioplasty and stenting should be considered in patients meeting the criteria

Fifth Edition 2016

F Carotid angioplasty and stenting should be considered for people with symptomatic carotid stenosis who are:
- unsuitable for open surgery (e.g. high carotid bifurcation, symptomatic re-stenosis following endarterectomy, radiotherapy-associated carotid stenosis);
or:
- less than 70 years of age and who have a preference for carotid artery stenting.
Endarterectomy (CEA) or stenting (CAS)?

- Increased risk of stroke with CAS, in those >70 yrs; longterm follow-up (ICSS) confirms small excess of largely non-disabling stroke at 5 yrs (about 3% absolute excess) (Bonati et al, 2014)

- Increased risk of MI, wound haematoma and cranial nerve palsy with CEA (Bonati et al, 2012)

- Risk of CAS appears greatest for procedures undertaken <7 days, with an excess of disabling and fatal stroke compared to CEA (Rantner et al, 2013)
## CEA & CAS – risks according to timing

<table>
<thead>
<tr>
<th></th>
<th>Endarterectomy</th>
<th>Stenting</th>
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<tbody>
<tr>
<td></td>
<td>% (No.)</td>
<td>Risk</td>
</tr>
<tr>
<td><strong>Any stroke</strong></td>
<td></td>
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<tr>
<td>0-7 days</td>
<td><strong>2.8 (3)</strong></td>
<td>1</td>
</tr>
<tr>
<td>8-14 days</td>
<td><strong>3.4 (7)</strong></td>
<td>1.2</td>
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<tr>
<td>&gt;14 days</td>
<td><strong>3.8 (41)</strong></td>
<td>1.3</td>
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<tr>
<td><strong>Disabling stroke or death</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-7 days</td>
<td><strong>0.9 (1)</strong></td>
<td>1</td>
</tr>
<tr>
<td>8-14 days</td>
<td><strong>1.4 (3)</strong></td>
<td>1.5</td>
</tr>
<tr>
<td>&gt;14 days</td>
<td><strong>2.6 (28)</strong></td>
<td>2.9</td>
</tr>
</tbody>
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Adjusted risks according to timing of treatment: pooled analysis from EVA-3S, SPACE and ICSS

Rantner et al, 2013
Blood pressure management

Fourth edition 2012

A All patients with stroke or TIA should have their blood pressure checked. Treatment should be initiated and/or increased as is necessary or tolerated to consistently achieve a clinic blood pressure below 130/80, except for patients with severe bilateral carotid stenosis, for whom a systolic blood pressure target of 130–150 is appropriate.

Fifth Edition 2016

A People with stroke or TIA should have their blood pressure checked, and treatment should be initiated and/or increased as tolerated to consistently achieve a clinic systolic blood pressure below 130 mmHg, except for people with severe bilateral carotid artery stenosis, for whom a systolic blood pressure target of 140–150 mmHg is appropriate.
BP – lower the better?

• PROGRESS trial

  — Similar stroke risk reductions in each of 4 baseline BP subgroups (<120, 120-139, 140-159, ≥160 mmHg)

  — Lowest risk of recurrence in those with lowest follow-up BP (median 112/72)

  — Net benefit from treatment for baseline BP levels extending down to 115/75 mmHg

  — No excess of serious side-effects

Arima et al, 2006
BP management; J-shaped curve?

- Blood pressure
- Stroke risk
BP – J-shaped curve?

• Concerns around benefits of intensive treatment, especially in the elderly:
  
  – Limited data for SBP targets <130 mmHg.
  
  – **ACCORD** (diabetic population) found no benefit for more intensive BP lowering (SBP <120mmHg vs <140 mmHg).
  
  – **SPS3** (h/o subcortical stroke) found a significant reduction in intracerebral haemorrhage for target SBP <130 mmHg vs 130-149 mmHg. Benefits for other outcomes were non-significant.
  
  – **SPRINT** (non-diabetic population) halted early after demonstrating significant 25% reduction in composite outcome for more intense SBP reduction to mean 121 mmHg vs 136 mmHg.
    
    • Excess of hypotensive, syncopal and renal adverse effects in the intensive therapy arm of SPRINT. Stroke risk was reduced, but non-significantly.
  
  – **SHOT** (Stroke in Hypertension Optimal Treatment) - in progress.
Largest meta-analysis to-date; 123 trials, 613,815 participants (Ettehad et al, 2016)

- Relative risk reductions for cardiovascular events (including stroke) proportional to magnitude of BP reduction achieved
- 10mmHg reduction in systolic BP (SBP) associated with a 27% reduction in stroke risk
- No significant trends according to baseline SBP, with no lesser effect if lower baseline SBP (<130mmHg)
- No significant trends according to baseline disease
- Calcium channel blockers most effective for stroke prevention
- Beta-blockers less effective than other drug classes
Quality of secondary prevention measures in TIA patients: a retrospective cohort study

K E Lager,¹ A Wilson,¹ K Khunti,¹ A K Mistri²

prescribed antithrombotic medication. QOF standards were achieved by 82% for blood pressure (≤150/90 mm Hg) and 61% for total cholesterol (≤5.0 mmol/l). RCP standards were achieved by 35% for blood pressure (≤130/80 mm Hg) and 28% for total cholesterol (<4.0 mmol/l). RCP standards for the provision of dietary and exercise advice were achieved by 29% and 34% of patients, respectively.
Paroxysmal AF

- certain patterns of ischaemic change seen on brain imaging increase the likelihood of an underlying cardioembolic source
  - cortico-subcortical infarcts
  - multiple lesions in anterior and posterior circulations and/or both cerebral hemispheres (Kang et al, 2003)
• Prolonged cardiac monitoring picks up otherwise unsuspected paroxysmal AF (PAF) post-stroke, with detection rates of around 12% (Kishore et al, 2014)

• Detection rates vary according to patient population, method of detection and duration of recording (Sposato et al, 2015):
  - Single admission ECG (AF) 7.7%
  - Serial ECG, in-pt telemetry/Holter monitoring 5.1%
  - Ambulatory Holter monitoring 10.7%
  - Outpatient telemetry, loop recording 16.9%
A People with stroke or TIA should be investigated with transthoracic echocardiography if the detection of a structural cardiac abnormality would prompt a change of management and if they have:
- clinical
- ECG findings
- signs of heart failure
disorders that could increase:

A People with stroke or TIA should be screened for obstructive sleep apnoea with a valid clinical screening tool. People who screen positive who are suspected of having sleep apnoea should be referred for specialist respiratory/sleep medicine assessment.
Obstructive sleep apnoea (OSA)

- Prevalence of OSA is 30-70% in stroke patients
- Most cardiovascular risk factors are more prevalent in people with OSA
- OSA is an independent risk factor for stroke
- People with OSA have worse functional outcomes, longer hospitalisation & increased risk of stroke recurrence
- Treatment of OSA has been shown to benefit cardiovascular risk factors.
- Uncertainty as to whether treatment reduces stroke recurrence but other health benefits are clear
# STOP-BANG!

| STOP                        |   |  
|-----------------------------|---|---
| Do you SNORE loudly (louder than talking or loud enough to be heard through closed doors)? | Yes | No |
| Do you often feel TIRED, fatigued, or sleepy during daytime? | Yes | No |
| Has anyone OBSERVED you stop breathing during your sleep? | Yes | No |
| Do you have or are you being treated for high blood PRESSURE? | Yes | No |

| BANG                        |   |  
|-----------------------------|---|---
| BMI more than 35kg/m²?      | Yes | No |
| AGE over 50 years old?      | Yes | No |
| NECK circumference > 16 inches (40cm)? | Yes | No |
| GENDER: Male?               | Yes | No |

| TOTAL SCORE                  |   |  
|------------------------------|---|---
| OSA risk:                    |   |  
| 5-8; high                   |   |  
| 3-4; intermediate           |   |  
| 0-2; low                    |   |  

Other risk factors

A People with stroke or TIA should be investigated with transthoracic echocardiography if the detection of a structural cardiac abnormality would prompt a change of management and if they have:
- abnormal clinical or ECG findings;
- signs of an inherited cardiac disorder that could increase the risk of stroke;
- heart failure.

A People with stroke or TIA should be screened for obstructive sleep apnoea with a valid clinical screening tool. People who screen positive who are suspected of having sleep apnoea should be referred for specialist respiratory/sleep medicine assessment.

E People with stroke or TIA who drink alcohol should be advised to limit their intake to 14 units a week, spread over at least three days.
Summary and parting thoughts

• Evolution rather than revolution
• An increase in the number of sections/sub-sections included
• Hopefully a more consistent approach to style and an improved layout and relationship to other chapters
• Greater flexibility for updating (and correcting??) given the move to a digital document
• Guideline development group of the Intercollegiate Stroke Working Party (ICSWP)
  – Manager and members of the RCP Stroke Programme
  – Members of the ICSWP
  – User representatives
  – Sub-group leads
  – Reviewers
  – Peer reviewers