Welcome to Evidence based stroke care: present & future
We will be starting shortly
Guideline Development Group organisations
Funding organisations

- Johnson & Johnson
- Welsh Government
- NIMAST
- Stroke Association
NATIONAL CLINICAL GUIDELINE FOR STROKE for the United Kingdom and Ireland

Guest introduction
Professor Sir Steve Powis
NHS England National Medical Director
NATIONAL CLINICAL GUIDELINE FOR STROKE
for the United Kingdom and Ireland

What’s new in organisation of services?
Dr Rebecca Fisher
National Stroke Programme Manager, Clinical Policy Unit, NHS England
Associate Director, King’s College London Stroke Programme
Stroke Rehabilitation matters

• Reflects a substantial evidence base for stroke rehabilitation
• Complex interventions and organisation of service delivery
• In-patient rehabilitation and community-based stroke care
Thank you
National policy and audit
What is new?

A multidisciplinary service providing early supported discharge and community stroke rehabilitation should adopt a minimum core team structure matching the recommendations in Table 2.8 and below.

Table 2.8 Recommended levels of staffing for multidisciplinary services providing early supported discharge and community stroke rehabilitation

<table>
<thead>
<tr>
<th>Discipline</th>
<th>WTE per 100 referrals to service p.a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiotherapy</td>
<td>1.0</td>
</tr>
<tr>
<td>Occupational therapy</td>
<td>1.0</td>
</tr>
<tr>
<td>Speech and language therapy</td>
<td>0.4</td>
</tr>
<tr>
<td>Social worker</td>
<td>Up to 0.5 and at least 0.5 WTE per team recommended locally</td>
</tr>
<tr>
<td>Rehabilitation assistant/assistant practitioners</td>
<td>1.0</td>
</tr>
<tr>
<td>Clinical psychology/neuropsychology</td>
<td>0.2-0.4*</td>
</tr>
<tr>
<td>Nursing</td>
<td>Up to 1.2 and at least 1 full time nurse per team</td>
</tr>
<tr>
<td>Medicine</td>
<td>0.1</td>
</tr>
</tbody>
</table>

*This reflects the time that a team member should be co-located within the MDT and could include additional skill mix, e.g. assistant psychologist.

The service should also include:
- Appropriate administration and management (including data management) support;
- Timely access to psychological and neuropsychological services (e.g. Improving Access to Psychological Therapies [IAPT] and community mental health services with stroke-specific training and appropriate supervision, psychology or neuropsychology departments), return to work and vocational rehabilitation services, dietetics, pharmacy, orthotics, orthoptics, spasticity services, specialist seating, assistive technology and information, pain management, advice and support for people with stroke and their family/carers. [2023]
Evidence based organisation of care
What is new?

- Registered staff
- Non-clinical time
- Non-face-to-face clinical activity (environmental visits, family contact and equipment ordering)
- Unregistered support workers and rehabilitation assistants under the supervision of registered staff
Making recommendations a reality
Summary

• Recommendations for organisation of stroke services
• Reflects a substantial evidence base for stroke rehabilitation
• Use guidelines with policy to support quality improvement and service transformation
• Build on recommended staffing levels with local data and narrative
• Support workers and rehabilitation assistants
• Keep stroke care and stroke rehabilitation as a national priorities
• Improve stroke services so stroke survivors get the evidence based care they deserve
What’s new in acute stroke care?

Ajay Bhalla, Consultant Stroke Physician, Guy’s and St Thomas’ Hospitals
Associate Director, Stroke Programme, King’s College, London
What’s new in acute stroke care?

- Thrombolysis
- Thrombectomy
- Intracerebral Haemorrhage
Are there are alternatives to Alteplase?

- TAAIS 2012
- ATTEST 2015
- NOR-TEST 2017
- EXTEND IA TNK 2018
- TRACE 2021
- NOR TEST 2A 2022
- TASTE A 2022
- AcT 2022
- TRACE-2 2023
AcT study

sICH: (TnK) 3.4% vs 3.2%  90 mortality (TnK) 15.3% vs 15.4%
3.5 Recommendations

A Patients with acute ischaemic stroke, regardless of age or stroke severity, in whom treatment can be started within 4.5 hours of known onset, should be considered for thrombolysis with alteplase or tenecteplase. [2023]
• Ease of use could facilitate faster treatment times and less resource
• Key subgroups of interest (TIMELESS, TEMPO-2, ETERNAL LVO, TASTE B, ATTEST 2)
• Tenecteplase shortage may limit implementation across Europe
  - Pharmaceutical Industry
  - European Regulators
What about stroke of unknown time of onset (including wake up stroke)?

MRI-Guided Thrombolysis for Stroke with Unknown Time of Onset

Excellent outcome: 53.3% vs 41.8%
Extended time window (4.5 hours to 9 hours)

mismatch ratio > 1.2, core volume < 70ml, mismatch volume > 10 mls

EXTEND study
ECASS 4, EXTEND, EPITHET

36% vs 26% adjusted odds ratio 2.06 (95% CI: 1.17 – 3.62, P=0.012)
Patients with acute ischaemic stroke, regardless of age or stroke severity, who were last known to be well more than 4.5 hours earlier, should be considered for thrombolysis with alteplase if:

- treatment can be started between 4.5 and 9 hours of known onset, or within 9 hours of the midpoint of sleep when they have woken with symptoms
What does the guideline say?

Patients with acute ischaemic stroke, regardless of age or stroke severity, who were last known to be well more than 4.5 hours earlier, should be considered for thrombolysis with alteplase if:

- treatment can be started between 4.5 and 9 hours of known onset, or within 9 hours of the midpoint of sleep when they have woken with symptoms

AND

- they have evidence from CT/MR perfusion (core-perfusion mismatch) or MRI (DWI-FLAIR mismatch) of the potential to salvage brain tissue (see Table 3.5.1 below).
Patients with acute ischaemic stroke, regardless of age or stroke severity, who were last known to be well more than 4.5 hours earlier, should be considered for thrombolysis with alteplase if:

- treatment can be started between 4.5 and 9 hours of known onset, or within 9 hours of the midpoint of sleep when they have woken with symptoms

AND

- they have evidence from CT/MR perfusion (core-perfusion mismatch) or MRI (DWI-FLAIR mismatch) of the potential to salvage brain tissue (see Table 3.5.1 below).

This should be irrespective of whether they have a large artery occlusion and require mechanical thrombectomy.
Thrombectomy

Baseline MRI/MRA
Follow-up MRI/MRA at 24 hours (NIHSS 17) – no infarct growth and partial recanalization
• MT strategies in different trials (6-24 hours): subtle differences

Complex Imaging
CTP, MRI

Select favourable profile

DAWN (6-24 hours)
DEFUSE-3 (6-16 hours)
• MT strategies in different trials (6-24 hours): subtle differences

Simple Imaging
CT brain + LAO on CTA

- ASPECTS 3-5
- MR CLEAN LATE?

- SELECT 2 (NNT 8)
- ANGEL ASPECT (NNT 6)
- Median mRS 4

Complex Imaging
CTP, MRI

- Select favourable profile

- DAWN (6-24 hours)
- DEFUSE-3 (6-16 hours)
MT strategies in different trials (6-24 hours): subtle differences

**Basilar Artery Occlusion**
CT brain + LAO on CTA

Select favourable profile
PC ASPECTS

**Simple Imaging**
CT brain + LAO on CTA

ASPECTS 3-5
MR CLEAN LATE ?

**Complex Imaging**
CTP, MRI

Select favourable profile

**ATTENTION** 12 hours (NNT 4)
BAOCHE 6-24 hours (NNT 4.5)

**SELECT 2** (NNT 8)
ANGEL ASPECT (NNT 6)
Median mRS 4

DAWN (6-24 hours)
DEFUSE-3 (6-16 hours)
What do the guidelines say?

Patients with acute ischaemic stroke eligible for mechanical thrombectomy should receive prior intravenous thrombolysis (unless contraindicated) irrespective of whether they have presented to an acute stroke centre or a thrombectomy centre. Every effort should be made to minimise process times throughout the treatment pathway and thrombolysis should not delay urgent transfer to a thrombectomy centre. [2023]
What do the guidelines say?

Patients with acute ischaemic stroke eligible for mechanical thrombectomy should receive prior intravenous thrombolysis (unless contraindicated) irrespective of whether they have presented to an acute stroke centre or a thrombectomy centre. Every effort should be made to minimise process times throughout the treatment pathway and thrombolysis should not delay urgent transfer to a thrombectomy centre. [2023]

Patients with acute anterior circulation ischaemic stroke, who were previously independent (mRS 0-2), should be considered for combination intravenous thrombolysis and intra-arterial clot extraction (using a stent retriever and/or aspiration techniques) if they have a proximal intracranial large artery occlusion causing a disabling neurological deficit (NIHSS score of 6 or more) and the procedure can begin within 6 hours of known onset. [2023]
What do the guidelines say?

Patients with acute anterior circulation ischaemic stroke and a proximal intracranial large artery occlusion (ICA and/or M1) causing a disabling neurological deficit (NIHSS score of 6 or more) of onset between 6 and 24 hours ago, including wake-up stroke, and with no previous disability (mRS 0 or 1) should be considered for intra-arterial clot extraction (using a stent retriever and/or aspiration techniques, combined with thrombolysis if eligible) providing the following imaging criteria are met:

- between 6 and 12 hours: an ASPECTS score of 3 or more, irrespective of the core infarct size;
- between 12 and 24 hours: an ASPECTS score of 3 or more and CT or MRI perfusion mismatch of greater than 15 mL, irrespective of the core infarct size. [2023]
Patients with acute ischaemic stroke in the posterior circulation within 12 hours of onset should be considered for mechanical thrombectomy (combined with thrombolysis if eligible) if they have a confirmed intracranial vertebral or basilar artery occlusion and their NIHSS score is 10 or more, combined with a favourable PC-ASPECTS score and Pons-Midbrain Index. Caution should be exercised when considering mechanical thrombectomy for patients presenting between 12 and 24 hours of onset and/or over the age of 80 owing to the paucity of data in these groups. [2023]
What’s happened with thrombectomy?

Proportion of all patients receiving thrombectomy (2015-2022)

Percentage of patients

- January-March 2022: 2.7%
- December 2022: 3.67%
Intracerebral haemorrhage

• Progression of haematoma

Anticoagulation
Large ICH volumes
Early Presentations
Spot Sign

Haemostatic agents
Blood pressure lowering
Patients with intracerebral haemorrhage in association with direct oral anticoagulant (DOAC) treatment should have the anticoagulant urgently reversed. For patients taking dabigatran, idarucizumab should be used. If idarucizumab is unavailable, 4-factor prothrombin complex concentrate may be considered. For those taking factor Xa inhibitors, 4-factor prothrombin complex concentrate should be considered and andexanet alfa may be considered in the context of a randomised controlled trial. [2023]
Acute blood pressure lowering in ICH

- No easy answer!

Original research

*Early lowering of blood pressure after acute intracerebral haemorrhage: a systematic review and meta-analysis of individual patient data*

Acute blood pressure lowering in ICH

• No easy answer!

Original research

Early lowering of blood pressure after acute intracerebral haemorrhage: a systematic review and meta-analysis

Blood pressure control and clinical outcomes in acute intracerebral haemorrhage: a preplanned pooled analysis of individual participant data


Philip M Beaty, on behalf of the Blood Pressure in Acute Stroke (BASC) Investigators
Acute blood pressure lowering in ICH

• No easy answer!

Original research

Early lowering of blood pressure after acute intracerebral haemorrhage: a systematic review and meta-analysis

Blood pressure control and clinical outcome in acute intracerebral haemorrhage: an individual participant data network meta-analysis of randomised trials

SAFE
FEASIBLE
FAST
INTENSIVE
STABLE
What do the guidelines say?

Patients with acute spontaneous intracerebral haemorrhage with a systolic BP of 150-220 mmHg should be considered for urgent treatment within 6 hours of symptom onset using a locally agreed protocol for BP lowering, aiming to achieve a systolic BP between 130-139 mmHg within one hour and sustained for at least 7 days, unless:

- the Glasgow Coma Scale score is 5 or less;
- the haematoma is very large and death is expected;
- a macrovascular or structural cause for the haematoma is identified;
- immediate surgery to evacuate the haematoma is planned, in which case BP should be managed according to a locally agreed protocol. [2023]

Patients with intracerebral haemorrhage should be admitted directly to a hyperacute stroke unit for monitoring of conscious level and referred immediately for repeat brain imaging if deterioration occurs. [2023]
What do the guidelines say?

Patients with acute spontaneous intracerebral haemorrhage with a systolic BP of 150-220 mmHg should be considered for urgent treatment within 6 hours of symptom onset using a locally agreed protocol for BP lowering, aiming to achieve a systolic BP between 130-139 mmHg within one hour and sustained for at least 7 days, unless:

- Early non-invasive cerebral angiography (CTA/MRA within 48 hours of onset) should be considered for all patients with acute spontaneous intracerebral haemorrhage aged 18-70 years who were independent, without a history of cancer, and not taking an anticoagulant, except if they are aged more than 45 years with hypertension and the haemorrhage is in the basal ganglia, thalamus, or posterior fossa. If this early CTA/MRA is normal or inconclusive, MRI/MRA with susceptibility-weighted imaging (SWI) should be considered at 3 months. Early CTA/MRA and MRI/MRA at 3 months may also be considered in patients not meeting these criteria where the probability of a macrovascular cause is felt to justify further investigation. [2023]
Concluding Thoughts

• Reperfusion Therapies

• Advanced Imaging

• Proactive approaches with intracerebral haemorrhage

• Implementation
NATIONAL CLINICAL GUIDELINE FOR STROKE
for the United Kingdom and Ireland

What’s new in rehab and recovery?

Ms Louise Clark
AHP Consultant – Stroke and Neuro Rehabilitation, Dorset County Hospital
SSNAP Associate Director, King’s College London Stroke Programme
What’s new in rehab and recovery?

What are you most excited about within the rehabilitation and recovery chapter?

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What’s new in rehab and recovery?

- Process
- Restructure
- Terminology

4. Physiotherapist
6. Occupational Therapist
7. Speech therapist
9. Neuropsychologist

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Rehabilitation potential
Telerehab and self-directed therapy
Mouth care
Vagal Nerve Stimulation
Psychological care

Screening and assessment
Apathy
Prevention of depression
What’s new in rehab and recovery?

Rehabilitation Potential
What’s new in rehab and recovery?

- Significant advances in the evidence base for dose and intensity of rehab therapy
- Motor recovery (walking, upper limb)
  - Daily therapy for up to 3 hours/day
  - Daily activity for up to 6 hours/day
  - Repetitive task practice should be the primary approach
What’s new in rehab and recovery?

- 24 hour therapy assessment target

Improvements in
- Balance
- Spasticity
- Vision
- Cardiovascular fitness
- Upper limb
Upper limb

- Repetitive task practice
- Electrical stimulation
- Vagus nerve stimulation
- Intensive upper limb programmes
- Mirror box
- Mental practice
- Robotics
- Telerehab
• Significant advances in the evidence base for dose and intensity of rehab therapy

• Language recovery
  • Use of assisted technology and telerehabilitation
  • More than 20-50 hours of therapy in chronic phase
What’s new in rehab and recovery?

- Psychological care
  - Screening and assessment
    - Difference between screening and assessment
    - Who should undertake these?
    - Delerium
    - Apathy
  - MDT formulation
  - Training and supervision

Case Formulation

- Predisposing factors
- Perpetuating factors
- Protective factors

LEVEL 1: "Sub-threshold problems" at a level common to many or most people with stroke. General difficulties coping and perceived consequences for the person's lifestyle and identity. Mild and transient symptoms of mood and/or cognitive disorders such as a fluctuating attitude to the outcomes of stroke, and which have little impact on engagement in rehabilitation. Support could be provided by nurses and stroke specialists.

LEVEL 2: Mild/Moderate symptoms of impaired mood and/or cognition that interfere with rehabilitation. These may be addressed by non-psychology stroke specialist staff supervised by clinical psychologists with special expertise in stroke or neuropsychologists.

LEVEL 3: Severe and persistent disorders of mood and/or cognition that are diagnosable and require specialized intervention. Psychologists are involved in rehabilitation and suicide risk assessment and have proved resistant to treatment at levels 1 and 2. These would require the intervention of clinical psychology with expertise in stroke or neuropsychology.

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What’s new in rehab and recovery?

- **Feeding decisions**
  - Comprehensive assessment of swallow within 24 hours
  - Timing and decision-making process for PEG feeding

- **Assessment and intervention**
  - FEES and videofluoroscopy
  - Use of pharyngeal electrical stimulation
  - Postural and environmental considerations
  - Medication formulation
Significant consensus statements on areas where randomised trial evidence is less strong:

- Rehabilitation potential
- Return to work
- Post-stroke fatigue
- Discharge from services
- Holistic reviews
Significant consensus statements on areas where randomised trial evidence is less strong:

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What’s new in rehab and recovery?
Significant consensus statements on areas where randomised trial evidence is weak:

• Rehabilitation potential
• Return to work
• Post-stroke fatigue
• Discharge from services
• Holistic reviews

What's new in rehab and recovery?

Fatigue after stroke

Stroke Helpline: 0303 3033 100
or email: helpline@stroke.org.uk

Fatigue affects most stroke survivors, and it can have a big effect on your life. This guide looks at the causes and impact of fatigue, and suggests practical ways you can help yourself and seek support.

What is post-stroke fatigue?

Fatigue is different from normal tiredness, as it doesn’t seem to get better with rest. It can happen after any type of stroke, big or small.

You can find out how to understand the triggers for your fatigue, and how to manage it. Fatigue can get better over time, and you can help to improve your recovery by getting support and trying techniques for managing...
What’s new in rehab and recovery?

Significant consensus statements on areas where randomised trial evidence is less strong:

- Rehabilitation potential
- Return to work
- Post-stroke fatigue
- Discharge from services
- Holistic reviews
Significant consensus statements on areas where randomised trial evidence is less strong:

- Rehabilitation potential
- Return to work
- Post-stroke fatigue
- Discharge from services
- Holistic reviews

What's new in rehab and recovery?

Proportion of patients receiving a six month assessment (2013-2022)

Percentage of patients

- In person
- Online
- By telephone
- By post

Figure 21: Proportion of patients receiving a follow-up six month after stroke, by follow-up method, 2013 to 2022.
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for the United Kingdom and Ireland

Long-term management and secondary prevention: the key updates
Prof Martin James
The Key updates for 2023

- Antiplatelet treatment
- Anticoagulant treatment
- Lipids and blood pressure
- Investigation for AF
- PFO closure
- Cerebral amyloid angiopathy
- CADASIL
- Physical activity
- Further rehabilitation and self-management
The Key updates for 2023

- Antiplatelet treatment
- Anticoagulant treatment
- Lipids and blood pressure
- Investigation for AF
- PFO closure
- Cerebral amyloid angiopathy
- CADASIL
- Physical activity
- Further rehabilitation and self-management
Antiplatelet treatment

• For acute TIA and minor stroke within 24 hours of onset:
  • Clopidogrel + Aspirin for 21 days
  OR
  • Ticagrelor + Aspirin for 30 days
  • Pushing at the margins of risk and benefit (e.g. TARDIS)
• For long-term secondary prevention: no change – clopidogrel 75mg OD
• Consider antiplatelet treatment for vascular prevention after haemorrhage
• Consider clopidogrel resistance if recurrence – use ticagrelor

Patients who have a spontaneous (non-traumatic) intracerebral haemorrhage (ICH) whilst taking an antithrombotic (antiplatelet or anticoagulant) medication for the prevention of occlusive vascular events may be considered for restarting antiplatelet treatment beyond 24 hours after ICH symptom onset. [2023]
Anticoagulation

• Timing of introduction of DOAC after cardioembolic stroke
  • should be considered for patients with mild stroke earlier than 5 days
  • may be considered for patients with moderate-to-severe stroke from 5-14 days after onset. Wherever possible these patients should be offered participation in a randomised trial

• The presence of cerebral microbleeds (regardless of number or distribution) need not preclude antithrombotic medication use
Lipid management

- A new, lower target of LDL below 1.8mmol/L (non-HDL below 2.5 mmol/L)
- Early escalation (every 4-6 weeks) using high-intensity statins → ezetimibe → injectables (inclisiran or PCSK9 inhibitor)
Summary of National Guidance for Lipid Management for Primary and Secondary Prevention of CVD

INITIAL CONSIDERATIONS:
- Measure non-fasting full lipid profile (total cholesterol, HDLC, non-HDLC, triglycerides) and HbA1c as part of an initial baseline assessment.
- Consider secondary causes of hyperlipidaemia and manage as needed.
- Ensure appropriate baseline and follow up tests as detailed on page 2. Measure BMI.
- Identify and exclude people with contraindications/interactions
- If non-fasting triglyceride above 4.5mmol/l, see page 2.

PRIMARY PREVENTION
Consider statin therapy for adults who do not have established CVD but fall into the categories below. Use QRISK risk assessment tool where appropriate (see page 2, Primary Prevention Risk Assessment).

- Age 40+ & QRISK ≥10% over next 10 years
- Type 2 diabetes and QRISK ≥10% over next 10 years
- Type 1 diabetes, if they have one or more of the following: Over 40 years, had diabetes for >10 years, have established nephropathy, have other CVD risk factors
- CKD eGFR <60ml/minute and/or albuminuria
- Age 40+ if appropriate consult Practice nurse, GP, and family history

IDENTIFY AND ADDRESS ALL MODIFIABLE RISK FACTORS: smoking, diet, obesity, alcohol intake, physical activity, blood pressure and HbA1c.

PRIMARY PREVENTION
If lifestyle modification is insufficient or inappropriate offer statin treatment. Atovasatin 20mg daily.

- Measure full lipid profile again after 3 months (non-fasting).
- High intensity statin treatment should achieve reduction of non-HDLC ≥40% from baseline if not achieved after 3 months:
  - discuss treatment adherence, timing of dose, diet and lifestyle
  - if at higher risk (based on comorbidities, risk score or clinical judgement) – see page 2. Additional Risk Factors’ consider increasing the dose every 2-3 months up to a maximum dose of atorvasatin 80mg daily.
  - For how to increase in people with CKD see “Special Patient Populations” (page 2).

TREATMENT TARGETS IN FH
If clinical diagnosis of FH and/or other risk factors present follow the recommended treatment management pathway for primary or secondary prevention as for non-FH, BUT Aim to achieve at least a 50% reduction of LDL-C (or non-fasting non-HDLC-C from baseline).

- Consider specialist referral for further treatment and/or consideration of NKTR therapy if:
  - See AACE Statin Tolerance Algorithm for advice regarding adverse effects (dial here).
  - Ezetimibe 10mg monotherapy may be considered. Assess response after 3 months.
  - Ezetimibe 10mg/potassium 160mg combination may be considered when ezetimibe alone does not control non-HDLC-C and enough (NICE TASH). If non-HDLC-C remains <40% of baseline despite maximal tolerated statin lowering therapy (including people with intolerances and contraindications), consider referral to specialist lipid management clinic according to local arrangements.

SECONDARY PREVENTION
Offer statin therapy to adults with CVD, this includes CHD, angina, Acute Coronary Syndrome (MI or unstable angina), previous cerebrovascular, stroke or TIA, or symptomatic peripheral arterial disease. Do not delay statin treatment if a person has acute coronary syndrome. Take a lipid specimen on admission (within 24 hours).

SEVERE HYPERLIPIDAEMIA
If TC ≥7.5mmol/l and/or LDL-C ≥5mmol/l, and/or: HDL-C < 1.0mmol/l, a personal and/or family history of confirmed CHD (<45 years), and with no secondary causes of a major cause of hypercholesterolaemia (genetic hypercholesterolaemia, genetic hypertriglyceridaemia, HDL-C deficiency, familial hyperlipidaemia).
Do not use QRISK risk assessment tool.

DIAGNOSIS AND REFERRAL
Take fasting blood for repeat lipid profile to measure LDL-C. Use the NCHS/Birmingham or Dutch Lipid Clinic Network (DLCN) criteria to make a clinical diagnosis of FH. Refer to Lipid Clinic for further assessment if clinical diagnosis of FH or if TC ≥9.0mmol/l and/or LDL-C ≥6.5mmol/l and/or HDL-C < 1.0mmol/l, or Fasting triglycerides = >4.5mmol/l, regardless of family history (page 2).

Consider additional risk factors, if present, together with QRISK score (scored for HIV, severe mental illness, taking medicines that cause dyslipidaemia, systemic inflammatory disorder (e.g. SLE), impaired fasting glycaemia, recent change in risk factors)

PRIVATE PREVENTION
Early escalation (every 4–6 weeks) using high-intensity statins → ezetimibe → injectables (inclisiran or PCSK9 inhibitor).

Identify and address all modifiable risk factors: smoking, diet, obesity, alcohol intake, physical activity, blood pressure and HbA1c.

SECONDARY PREVENTION
Do not delay statin treatment in secondary prevention while managing modifiable risk factors.

Prescribe a high intensity statin.

Atovasatin 20mg daily

SECONDARY PREVENTION
Use a lower dose of atorvasatin if there is a potential drug interaction, high risk of or experiencing adverse effects, or patient preference.

Offer astatin 20mg if GFR < 60 ml/minute (73cm).
A new, lower target of LDL below 1.8mmol/L (non-HDL below 2.5 mmol/L)

Early escalation (every 4-6 weeks) using high-intensity statins → ezetimibe → injectables (incl. inclisiran or PCSK9 inhibitor)

Lipid management
Blood pressure-lowering treatment

• A lower BP target than recommended by NICE
• Encouraging the use of home (and ambulatory) BP measurement to guide self-management and treatment

5.4 A

People with stroke or TIA should have their blood pressure checked, and treatment should be initiated or increased as tolerated to consistently achieve a clinic systolic blood pressure below 130 mmHg, equivalent to a home systolic blood pressure below 125 mmHg. The exception is for people with severe bilateral carotid artery stenosis, for whom a systolic blood pressure target of 140–150 mmHg is appropriate. Concern about potential adverse effects should not impede the initiation of treatment that prevents stroke, major cardiovascular events or mortality. [2023]
Investigation for paroxysmal AF

- Increased role for implantable loop recorders and other devices
  - Investigation for paroxysmal AF
  - Another systematic review and metanalysis (Tsivgoulis et al, ESJ March 2023)
    - Prolonged monitoring (>7 days) associated with greater AF detection and more AC uptake
    - No association between prolonged monitoring and stroke/TIA recurrence, all-cause mortality, intracranial hemorrhage, or major bleeding
    - More RCTs are warranted

5.9 A

Patients with ischaemic stroke or TIA not already diagnosed with AF should undergo an initial period of cardiac monitoring for a minimum of 7 days, or until anticoagulation can be safely commenced.

[2023]

5.9 B

Patients with ischaemic stroke or TIA, in whom no other cause can be identified, and in whom a cardioembolic cause is suspected, should be considered for a comprehensive neurovascular investigation (stroke of undetermined cause) which includes sequential or continuous cardiac rhythm monitoring with an external cardiac monitor or an implantable loop recorder if they are appropriate for anticoagulation.
Patent Foramen Ovale

- Reversal of 2016 recommendation
- 70 systematic reviews!
- People below the age of 60 with stroke of undetermined aetiology
- Associated with PFO with atrial septal aneurysm or right-to-left shunt
- Considered for closure within 6 months of index event
- Multidisciplinary decision-making to balance risk and benefit, including risk of AF and procedural complications
New sections

Cerebral amyloid angiopathy

• Need more trials! If not, then...
• Consider BP lowering to below 130/80
• Consider antiplatelet treatment
• Consider anticoagulation
• Consider LAAO device

CADASIL

• Intensive risk factor management inc. statins
• Consider BP lowering to below 130/80
• Antiplatelet treatment for ischaemic stroke and TIA, even with microbleeds
Physical activity and further rehab

- Cardiorespiratory or mixed training for fitness
- Equipment and facilities should be made available
- Outside statutory health services
  e.g. fitness trainers
- Collaboration with cardiac and pulmonary rehabilitation

Further Rehabilitation

- Reviews beyond 6 months to identify further needs
- Interventions offered if further goals can be identified and agreed
- People with stroke should be supported with their own self-management plan
Key updates for 2023: More...

- More intensive antiplatelet treatment
- More intensive lipid and blood pressure management (lower targets)
- More people eligible for PFO closure
- More people warranted for ILRs
- More research needed for prevention in cerebral amyloid angiopathy and CADASIL
- More facilities, equipment and support for physical activity and self-management