NATIONAL CLINICAL GUIDELINE FOR STROKE

for the United Kingdom and Ireland

Welcome to Evidence based stroke care: present & future

We will be starting shortly

Guideline Development Group organisations

Funding organisations

Johnson & Johnson

Llywodraeth Cymru
Welsh Government

NIMAST
Connecting Professionals in Stroke

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?

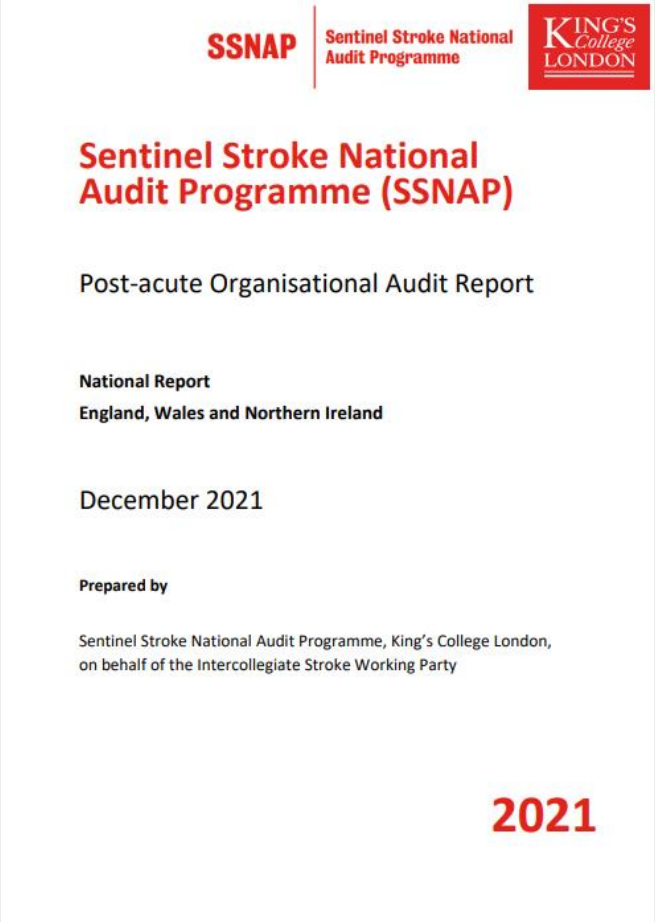
Dr Rebecca Fisher
National Stroke Programme Manager, Clinical Policy Unit, NHS England
Associate Director, King's College London Stroke Programme

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


SSNAP | Sentinel Stroke National Audit Programme | King's College London

Sentinel Stroke National Audit Programme (SSNAP)

Post-acute Organisational Audit Report

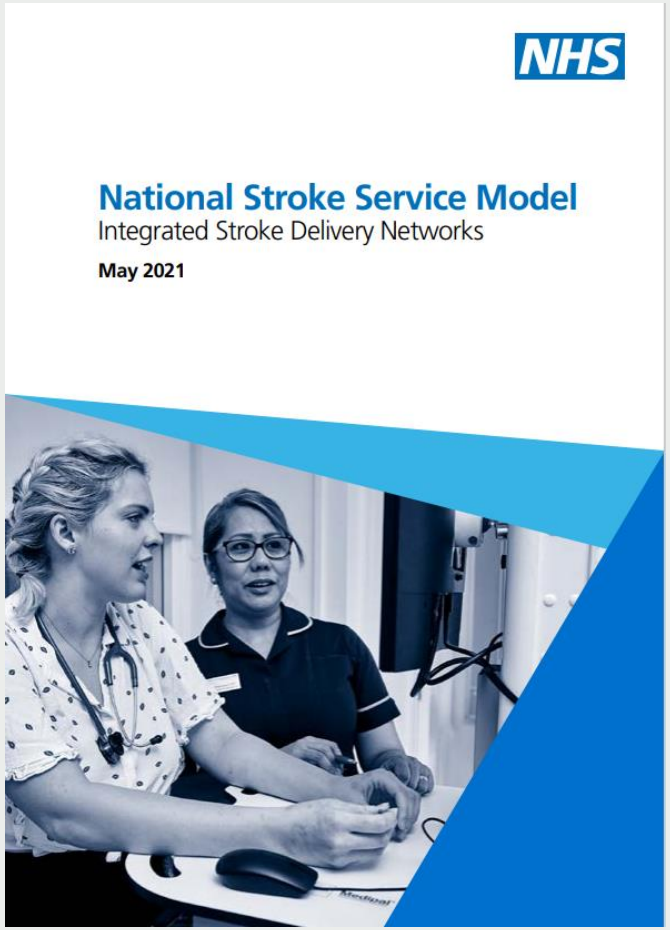
National Report
England, Wales and Northern Ireland

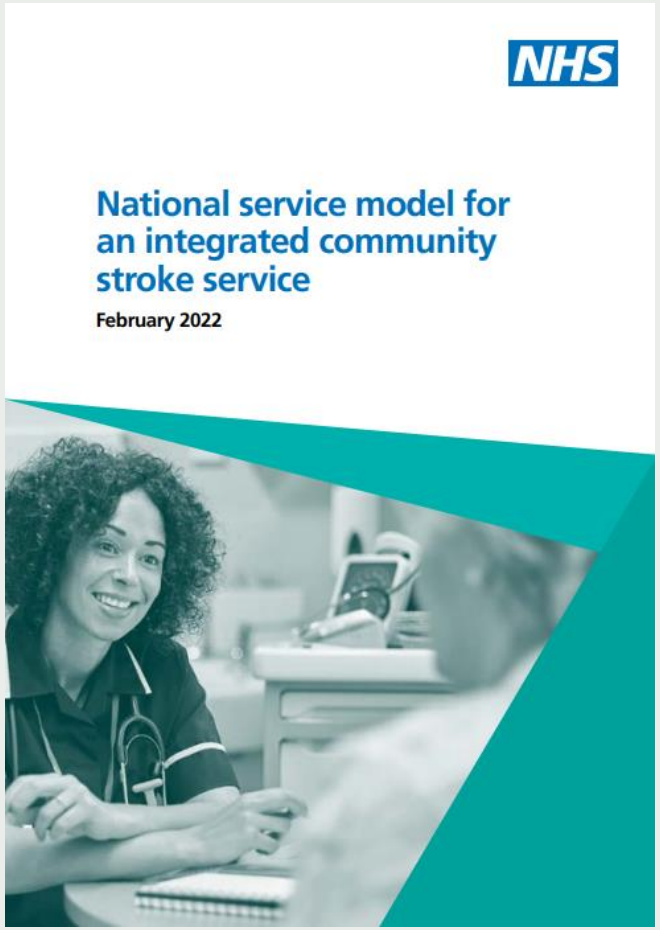
December 2021

Prepared by

Sentinel Stroke National Audit Programme, King's College London, on behalf of the Intercollegiate Stroke Working Party

2021





What is new?

F 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

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

*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

THE COCHRANE COLLABORATION®

Circulation: Cardiovascular Quality and Outcomes
Volume 13, Issue 8, August 2020
https://doi.org/10.1161/CIRCOUTCOMES.119.006395

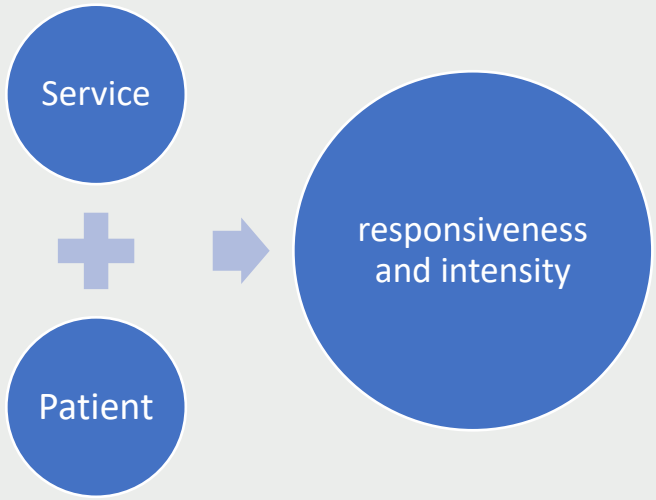
American Heart Association.

ORIGINAL ARTICLE

Effectiveness of Stroke Early Supported Discharge

Analysis From a National Stroke Registry

Rebecca J. Fisher, PhD, Adrian Byrne, PhD, Niki Chouliara, PhD, Sarah Lewis, PhD, Lizz Paley, MSc, Alex Hoffman, MSc, Anthony Rudd, MD, Thompson Robinson, MD, Peter Langhorne, PhD, and Marion F. Walker, PhD



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Health Services and Delivery Research
Volume 9 • Issue 22 • November 2021
ISSN 2050-4349

Large-scale implementation of stroke early supported discharge: the WISE realist mixed-methods study

Rebecca J Fisher, Niki Chouliara, Adrian Byrne, Trudi Cameron, Sarah Lewis, Peter Langhorne, Thompson Robinson, Justin Waring, Claudia Geue, Lizz Paley, Anthony Rudd and Marion F Walker

DOI 10.3310/hsdr09220

What is new?

2.5 Recommendations

A People with stroke should be treated in a specialist stroke unit throughout their hospital stay unless their stroke is not the predominant clinical problem. **[2016]**

B A hyperacute, acute and rehabilitation stroke service should provide specialist medical, nursing, and rehabilitation staffing levels matching the recommendations in Table 2.5 below.

Table 2.5 Recommended levels of staffing for hyperacute, acute and rehabilitation units

	Physio-therapy	Occupational therapy	Speech and language therapy	Clinical psychology / neuro-psychology	Dietetics	Nursing	Consultant stroke physician	Consultant-level practitioner-led ward rounds
Hyper-acute stroke unit	Whole-time equivalents (WTE) per 5 beds*					WTE per bed	24/7 availability; minimum 6.0 thrombolysis trained physicians on rota	Twice daily ward round
	1.02	0.95	0.48	0.28	0.21	2.9 (80:20 registered: unregis-tered)		
Acute stroke unit & stroke rehab-ilitation unit	1.18	1.13	0.56	0.28	0.21	1.35 (65:35 registered: unregis-tered)	Acute stroke unit: 7 day cover with adequate out of hours arrange-ments**	Acute stroke unit: daily ward round** Stroke rehabilit-ation unit: twice-weekly ward round**

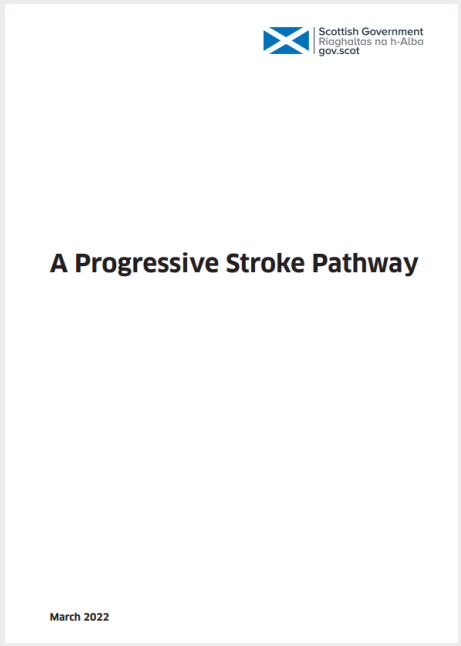
* WTE figures are for 7-day working for registered staff and include non-clinical time (such as supervision and professional development) as well as non-face-to-face clinical activity. Registered staff should be augmented by support workers and rehabilitation assistants to achieve the intensity and dose of therapy recommended in Section 4.2 *Rehabilitation approach – intensity of therapy (motor recovery and function)*.

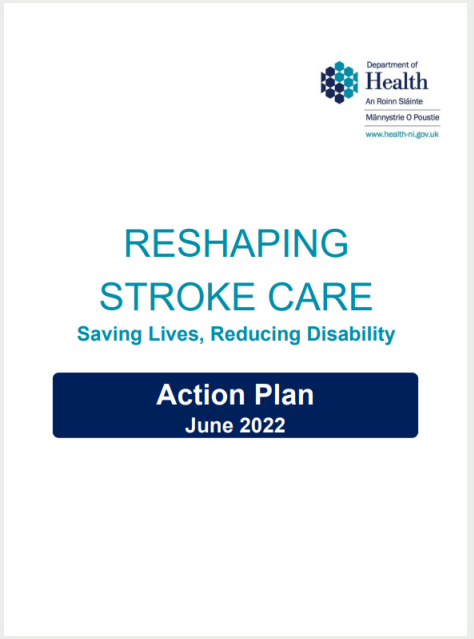
** Consultant stroke physician input may need to be adjusted according to the acuity of the unit. All acute and rehabilitation units should have at least 2 ward rounds per week led by a consultant-level practitioner (physician, nurse or therapist; see Recommendation 2.5K). For recommendations regarding orthoptist staffing, see Section 4.48 *Vision*.

[2023]

- 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

NATIONAL CLINICAL GUIDELINE FOR STROKE

for the United Kingdom and Ireland

What's new in acute stroke care?

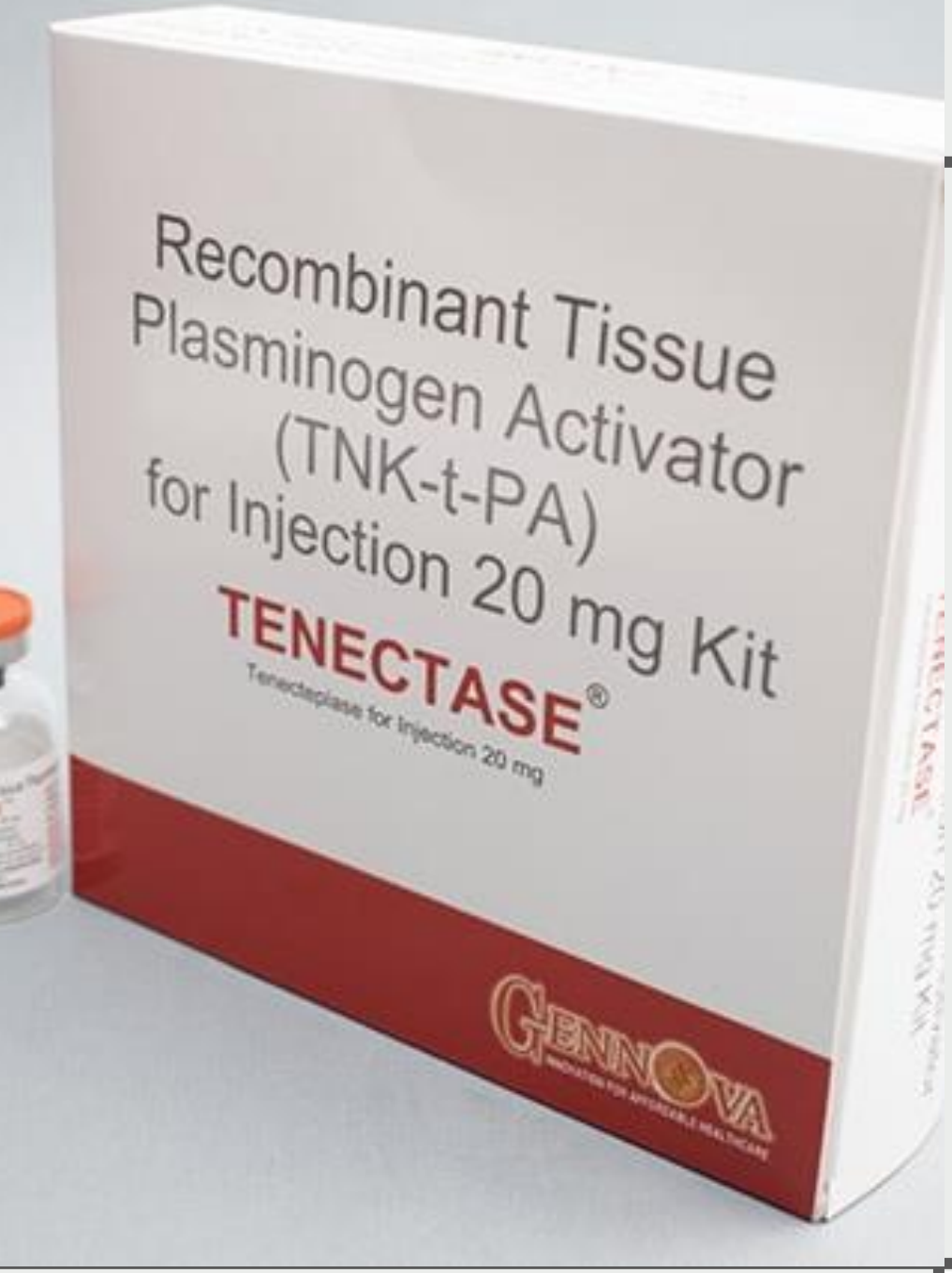
Ajay Bhalla, Consultant Stroke Physician, Guy's and St Thomas' Hospitals
Associate Director, Stroke Programme, King's College, London

What's new in acute stroke care?

Thrombolysis

Thrombectomy

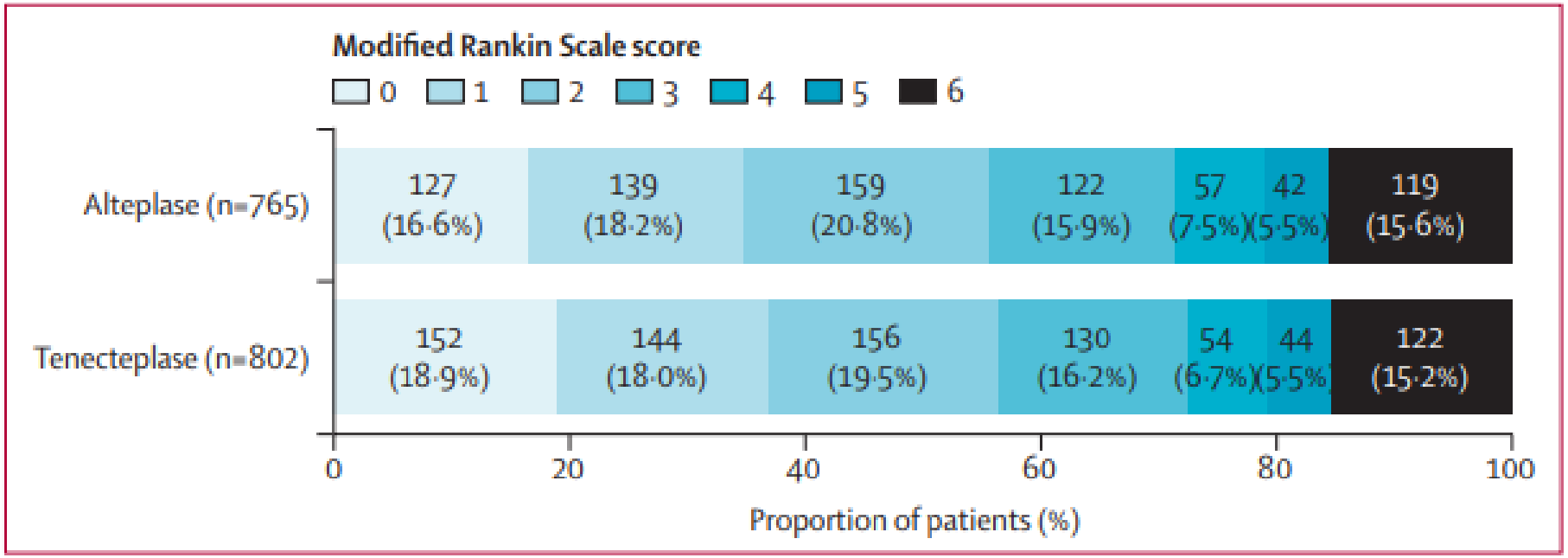
Intracerebral Haemorrhage



Are there are alternatives to Alteplase?

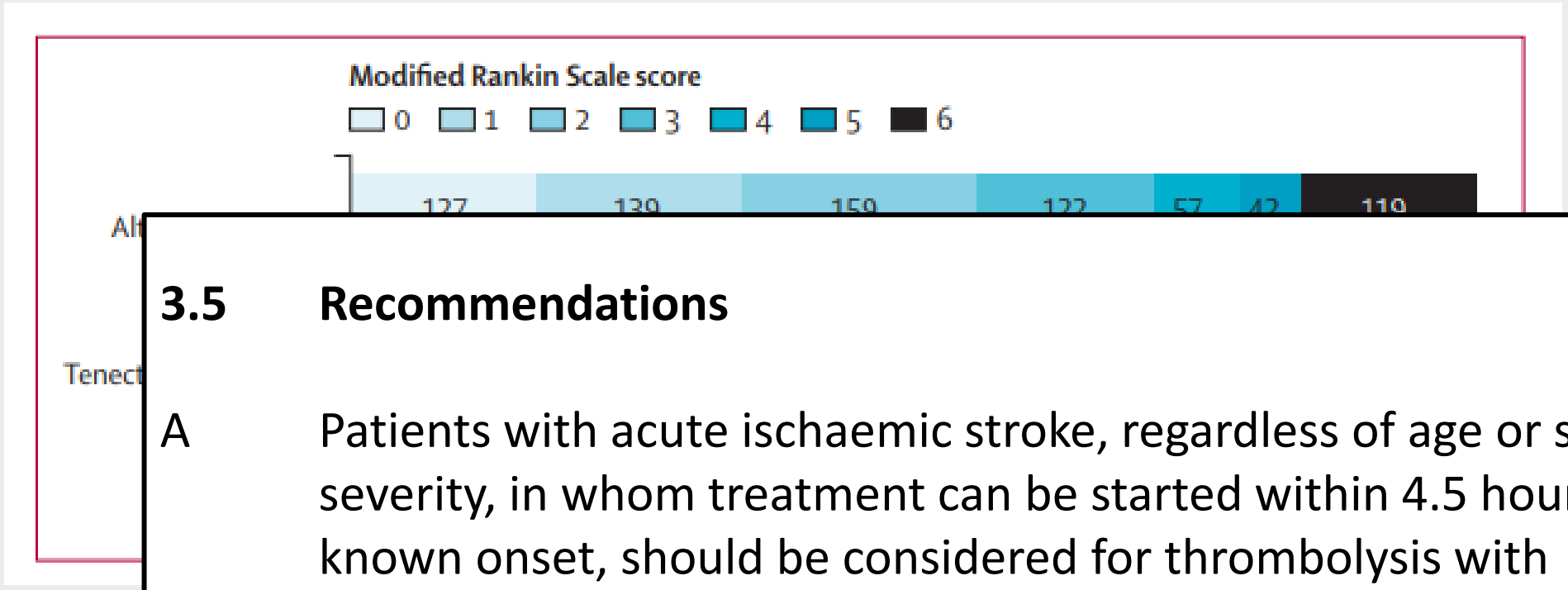
- TAAIS 2012
- ATTEST 2015
- NOR-TEST 2017
- EXTEND IA TNK 2018
- TRACE 2021
- NOR TEST 2A 2022
- TASTE A 2022
- **AcT 2022**
- **TRACE-2 2023**

AcT study



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

AcT study



3.5 Recommendations

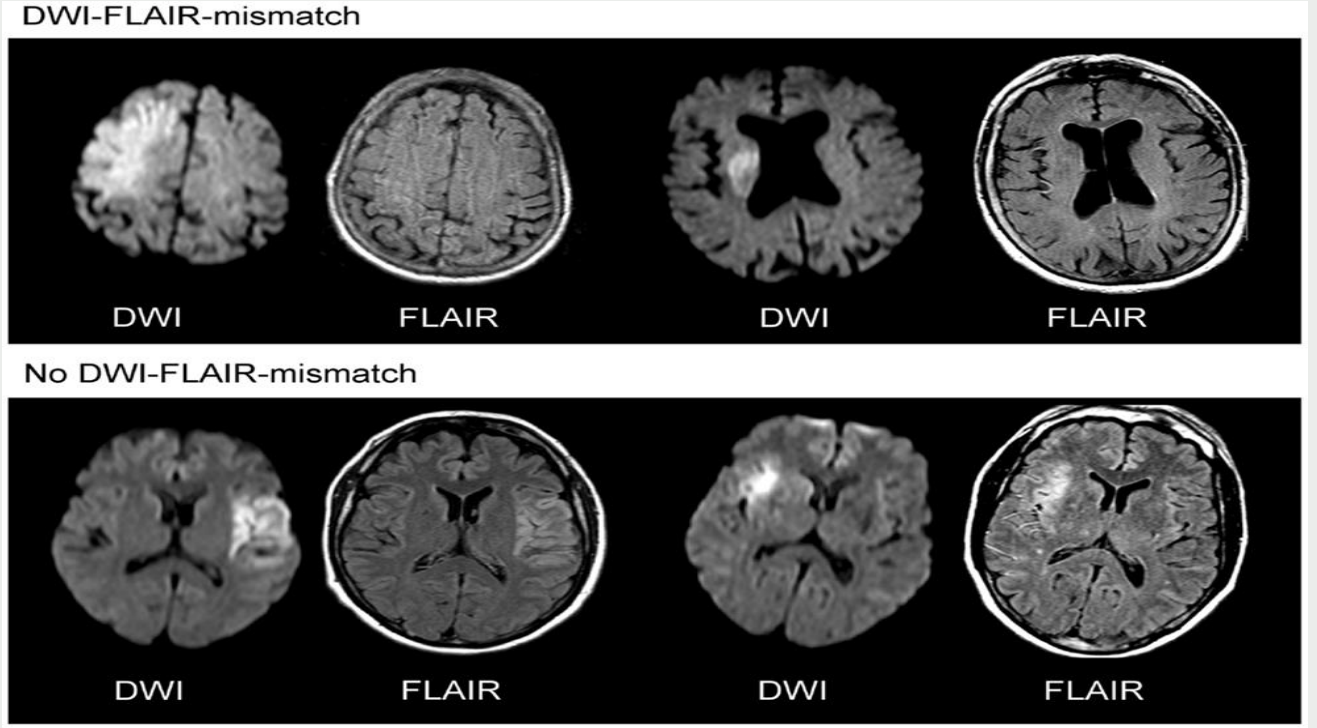
A Patients with acute ischaemic stroke, regardless of age or stroke severity, in whom treatment can be started within 4.5 hours of known onset, should be considered for thrombolysis with alteplase or tenecteplase. **[2023]**

Implications for Tenecteplase

- 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

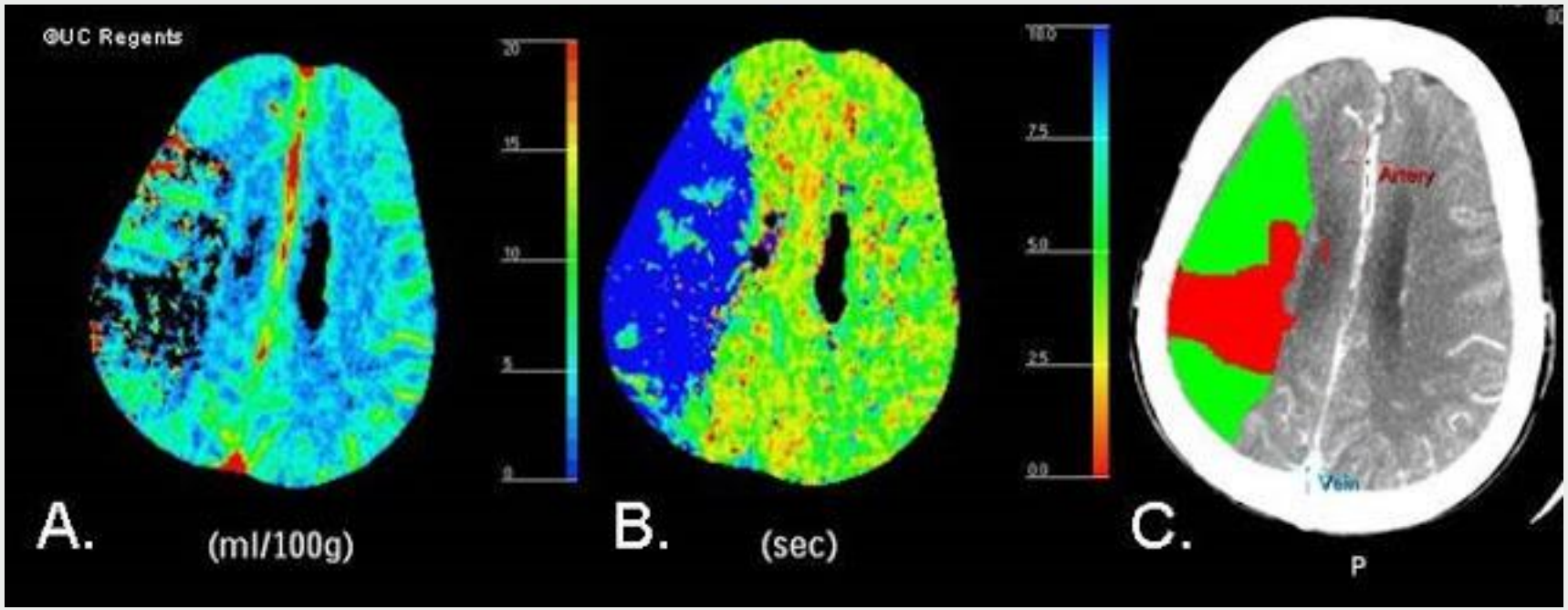
What about stroke of unknown time of onset (including wake up stroke)?

MRI-Guided Thrombolysis for Stroke with Unknown Time of Onset



Excellent outcome : 53.3% vs 41.8%

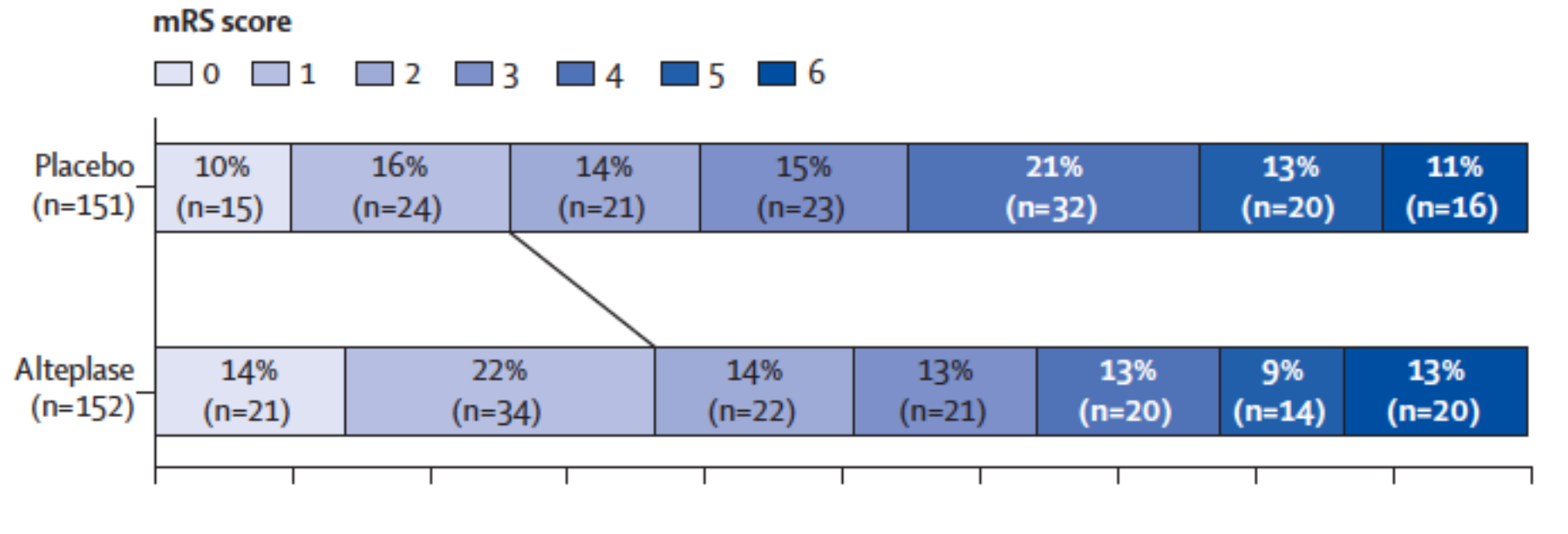
Extended time window (4.5 hours to 9 hours)



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

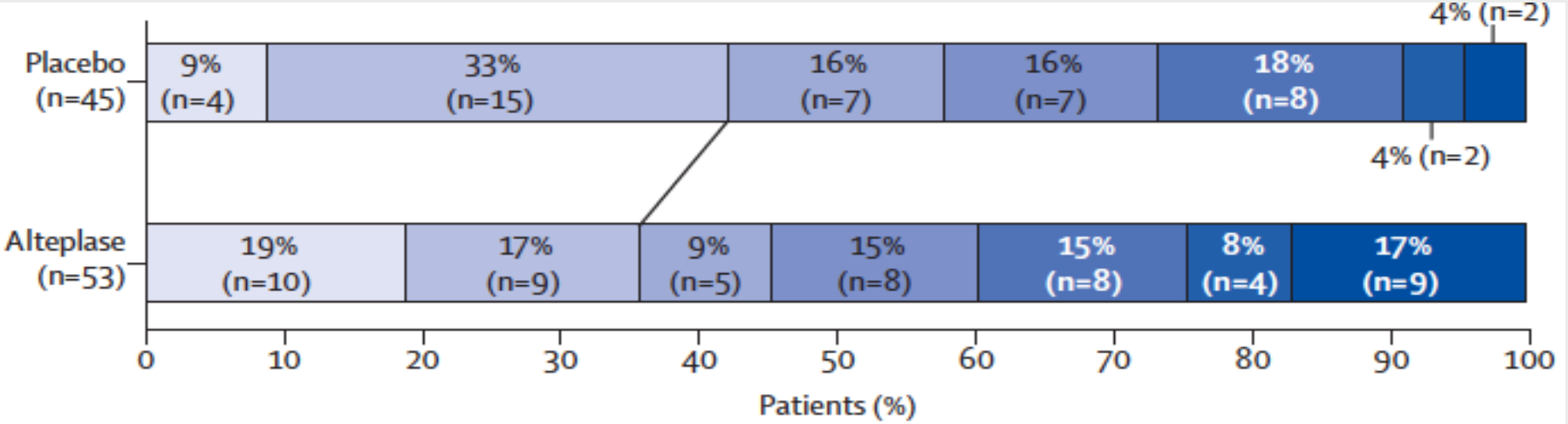
EXTEND study

ECASS 4, EXTEND, EPITHET



Automated perfusion mismatch

36% vs 26% adjusted odds ratio **2.06** (95% CI: 1.17 – 3.62, P=0.012



No automated perfusion mismatch

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

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*)*.

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:

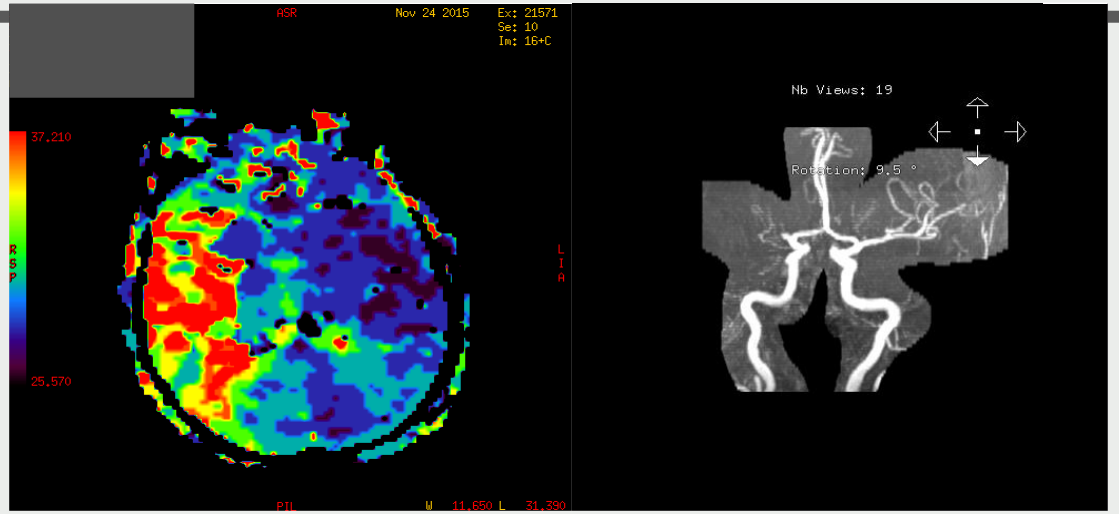
– treatment can be started between 4.5 and 9 hours of known onset, or within 9 hours of the midpoint of sleep when they have woken with symptoms

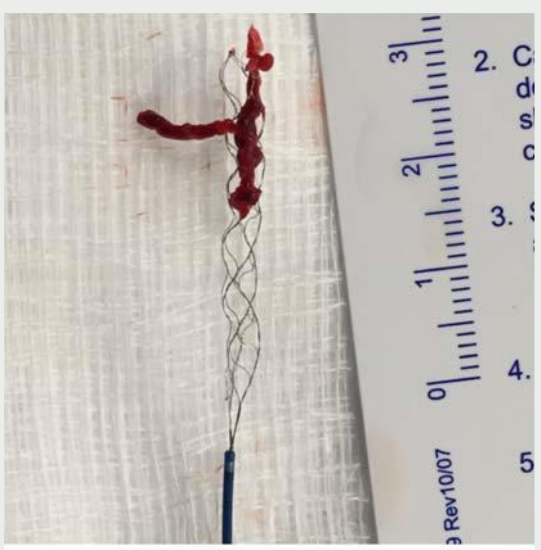
AND

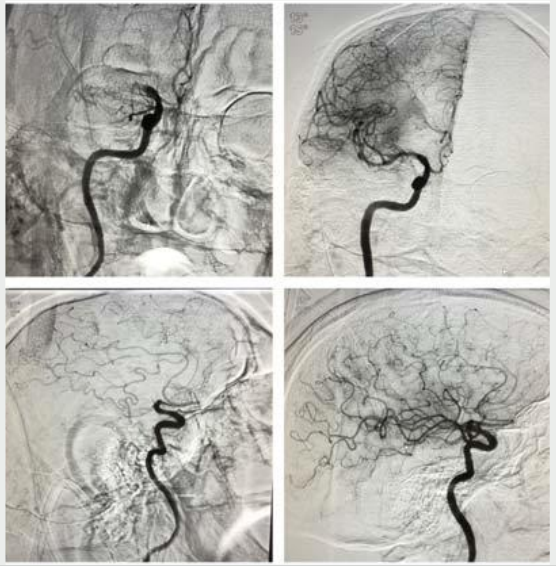
– they have evidence from CT/MR perfusion (core-perfusion mismatch) or MRI (DWI-FLAIR mismatch) of the potential to salvage brain tissue *(see Table 3.5.1* below*)*.

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

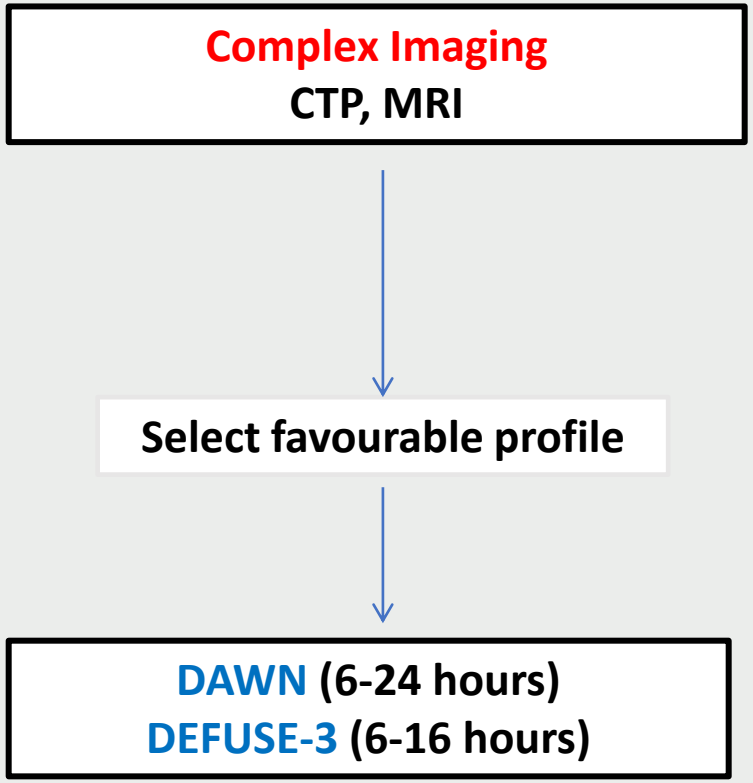
Thrombectomy



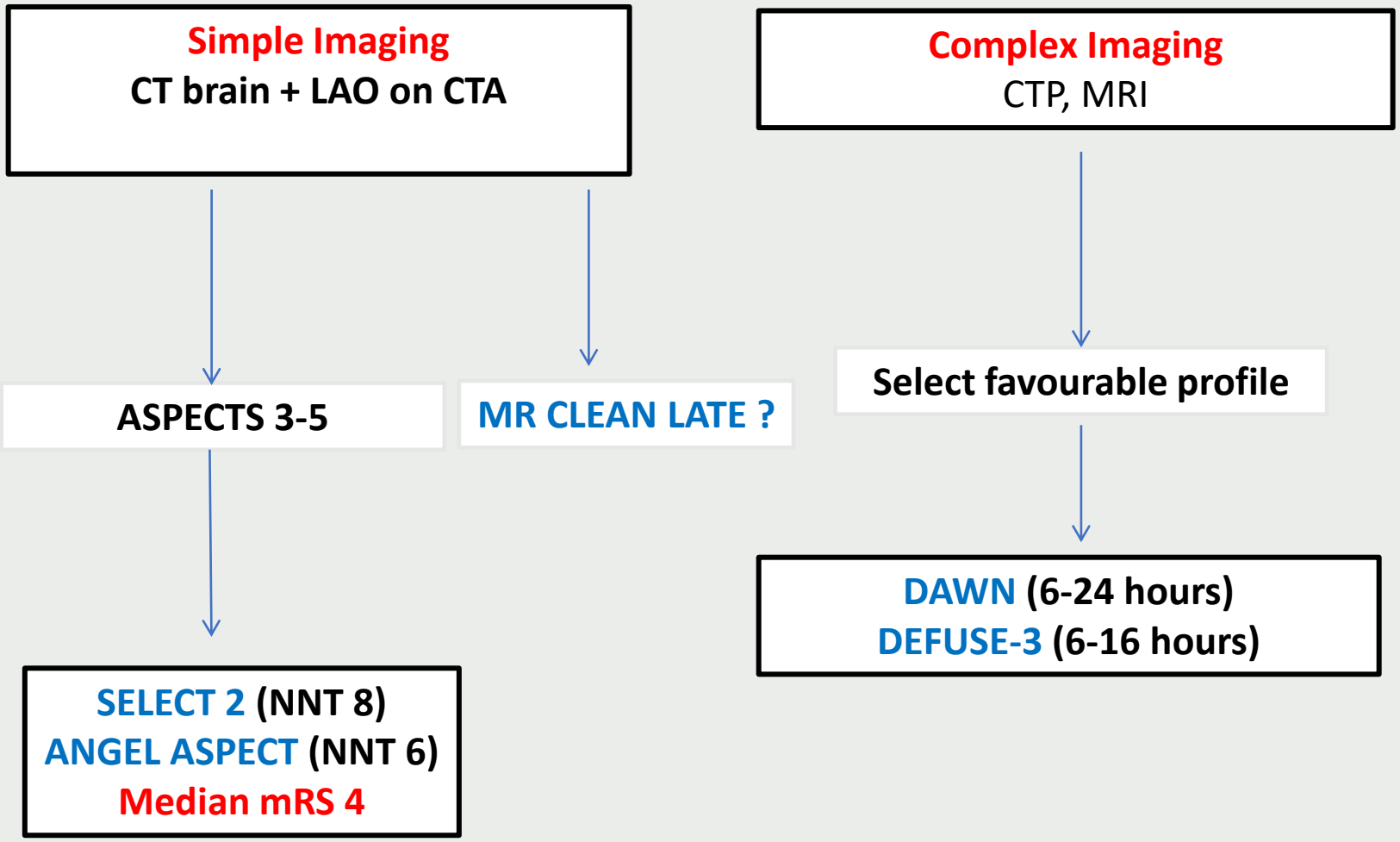




• MT strategies in different trials (6-24 hours): subtle differences



• MT strategies in different trials (6-24 hours): subtle differences



MT strategies in different trials (6-24 hours): subtle differences

Basilar Artery Occlusion
CT brain + LAO on CTA

↓

Select favourable profile
PC ASPECTS

↓

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

Simple Imaging
CT brain + LAO on CTA

↓

ASPECTS 3-5

↓

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

↓

MR CLEAN LATE ?

Complex Imaging
CTP, MRI

↓

Select favourable profile

↓

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?

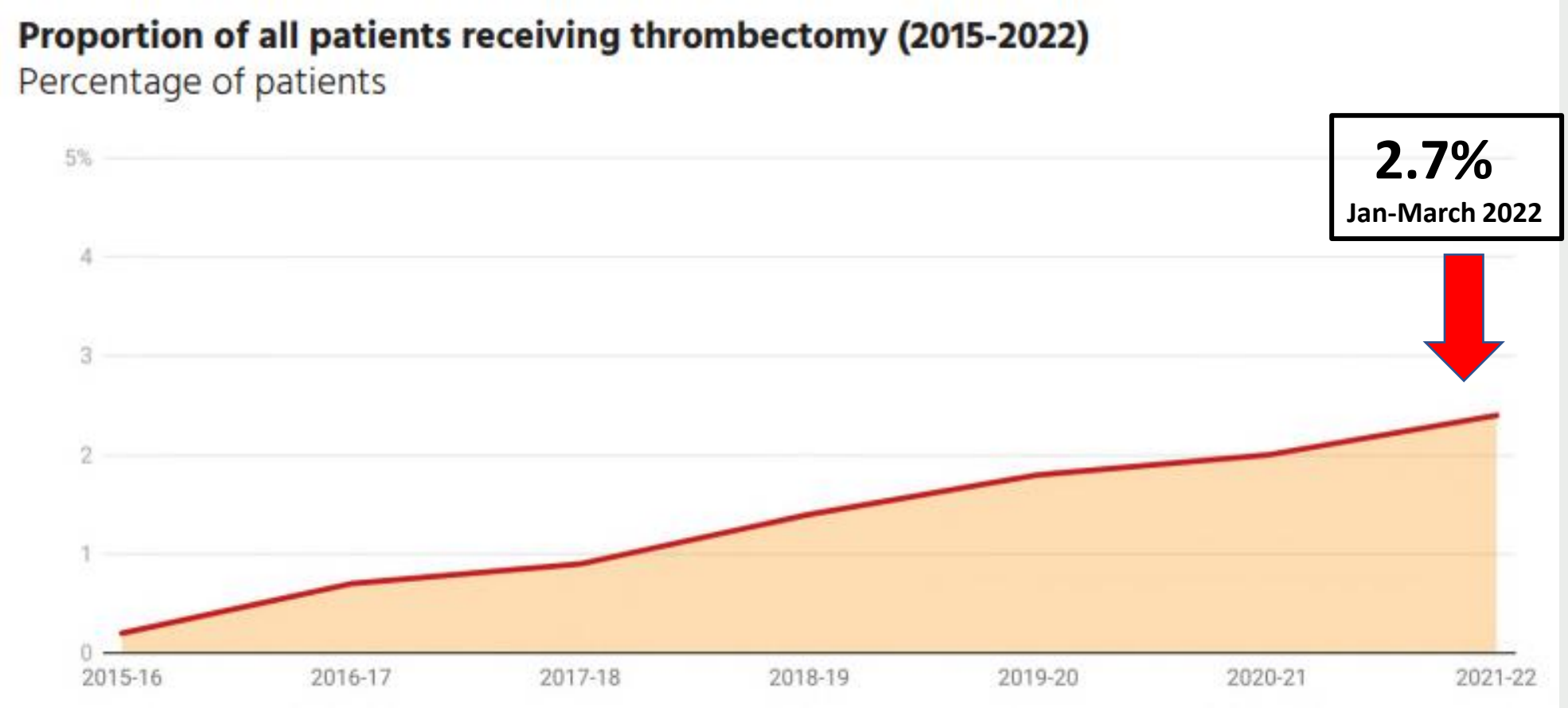
Patients with acute anterior circulation ischaemic stroke and a proximal intracranial large artery occlusion (ICA and/or M1) causing a disabling neurological deficit (NIHSS score of 6 or more) of onset between 6 and 24 hours ago, including wake-up stroke, and with no previous disability (mRS 0 or 1) 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]**

What do the guidelines say?

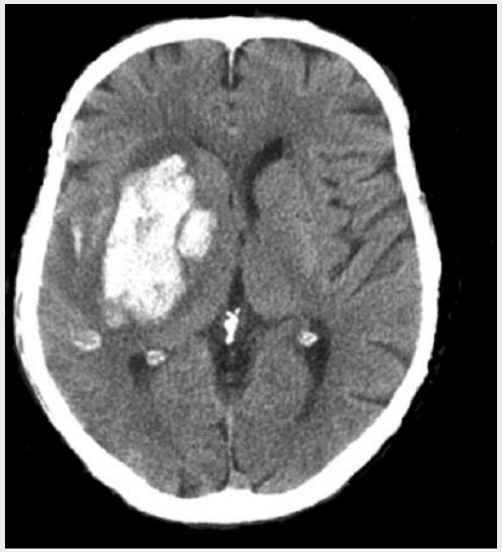
Patients with acute ischaemic stroke in the posterior circulation within 12 hours of onset should be considered for mechanical thrombectomy (combined with thrombolysis if eligible) if they have a confirmed intracranial vertebral or basilar artery occlusion and their NIHSS score is 10 or more, combined 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?

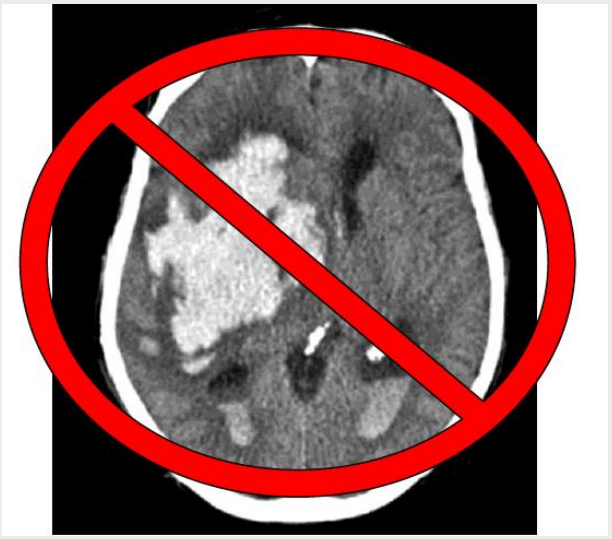


Intracerebral haemorrhage

- **Progression of haematoma**



Anticoagulation
Large ICH volumes
Early Presentations
Spot Sign



Haemostatic agents
Blood pressure lowering

What do the guidelines say?

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

Tom J Moullaali ,[1,2] Xia Wang ,[1] Else Charlotte Sandset,[3,4] Lisa J Woodhouse,[5] Zhe Kang Law ,[5,6,7] Hisatomi Arima,[8] Kenneth S Butcher,[9] John Chalmers,[1] Candice Delcourt ,[1,10,11] Leon Edwards,[10,11] Salil Gupta,[12] Wen Jiang,[13,14] Sebastian Koch,[15] John Potter,[16,17] Adnan I Qureshi,[18] Thompson G Robinson,[19] Rustam Al-Shahi Salman,[2] Jeffrey L Saver,[20] Nikola Sprigg,[5,6] Joanna M Wardlaw ,[2] Craig S Anderson,[1,9,10,21] Philip M Bath,[5,6] On behalf of the Blood Pressure in Acute Stroke (BASC) Investigators

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

Tom J Moullaali, Zhe Kang Law, Candice Delcourt, Sebastian Koch, Rustam Al-Shahi Salman, Craig S Anderson, Stroke (BASC) Investigators

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

Tom J Moullaali, Xia Wang*, Reneé H Martin, Virginia B Shipes, Thompson G Robinson, John Chalmers, Jose I Suarez, Adnan I Qureshi, Yuko Y Palesch, Craig S Anderson*

Acute blood pressure lowering in ICH

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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:

–
–
–
–

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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

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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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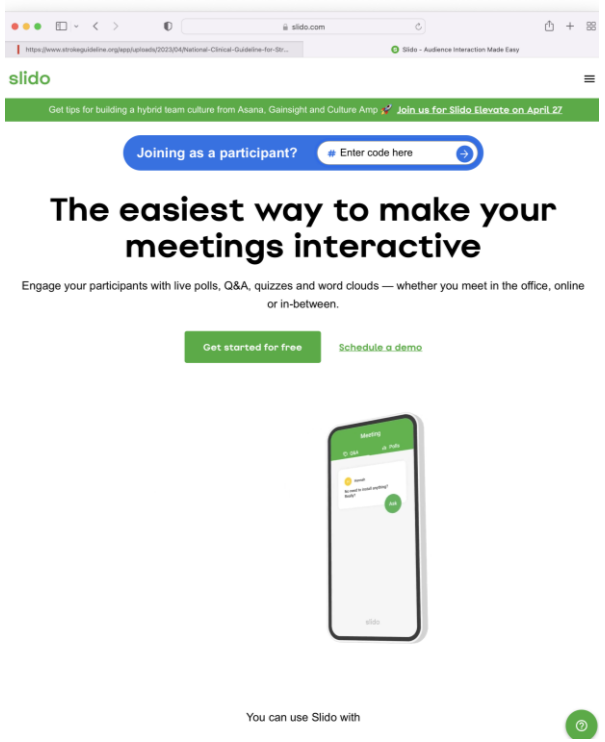

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What's new in rehab and recovery?

- Process
- Restructure
- Terminology

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

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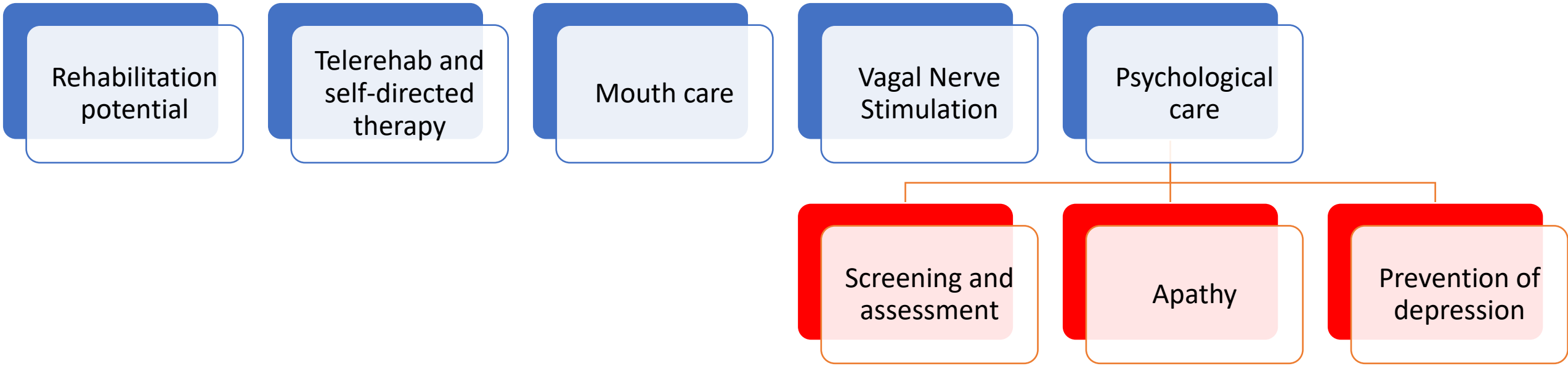
What's new in rehab and recovery?



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What's new in rehab and recovery?

Rehabilitation Potential

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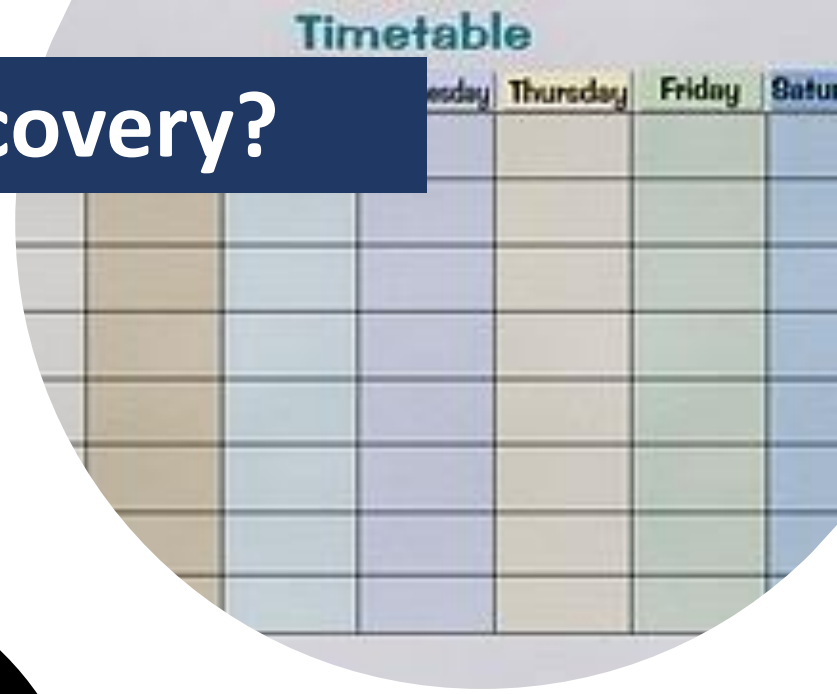
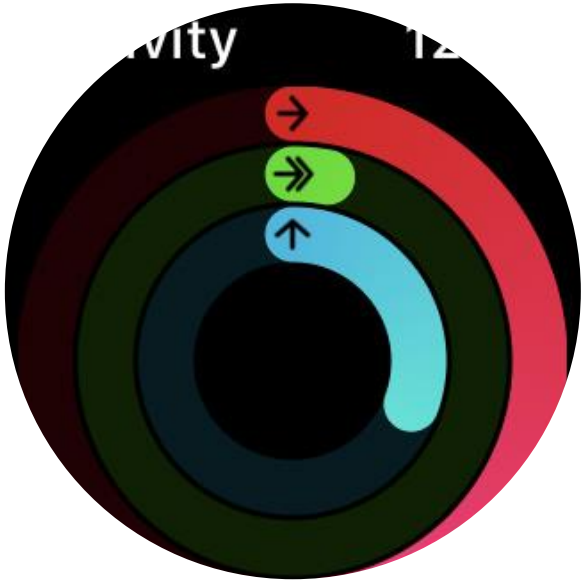
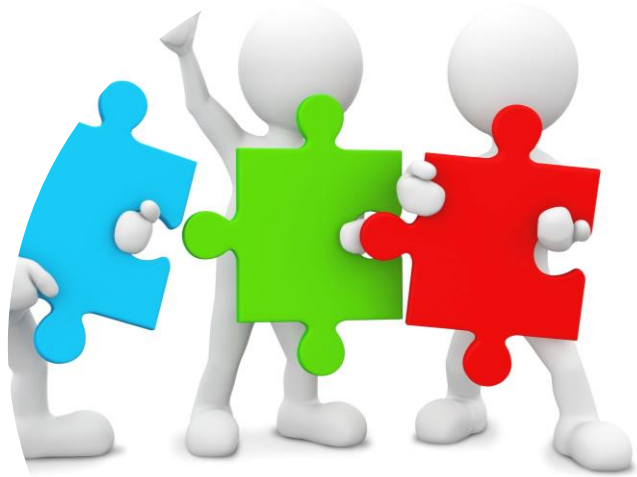
What's new in rehab and recovery?

- **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







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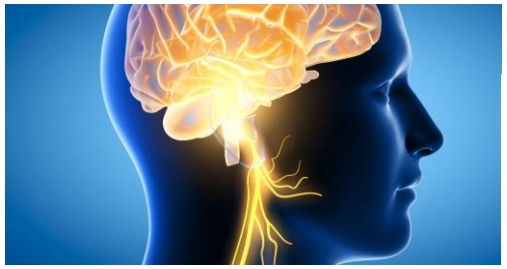
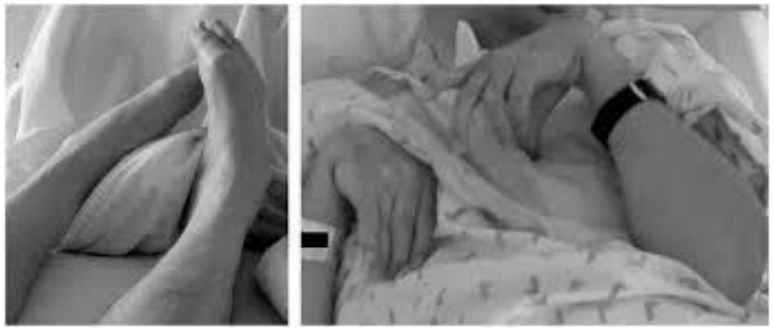
What's new in rehab and recovery?

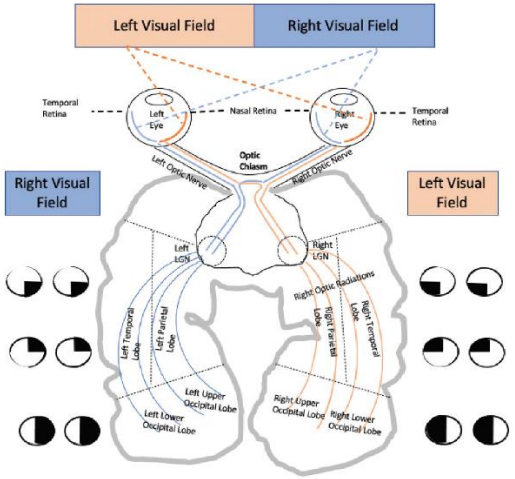
- 24 hour therapy assessment target



Improvements in

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





NATIONAL CLINICAL GUIDELINE FOR STROKE
for the United Kingdom and Ireland

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What's new in rehab and recovery?

- **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

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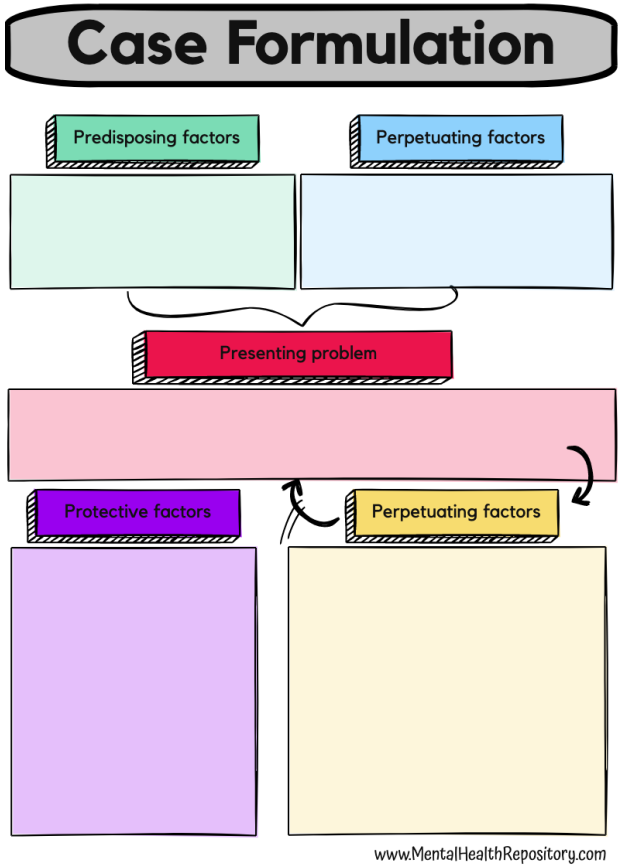
What's new in rehab and recovery?

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



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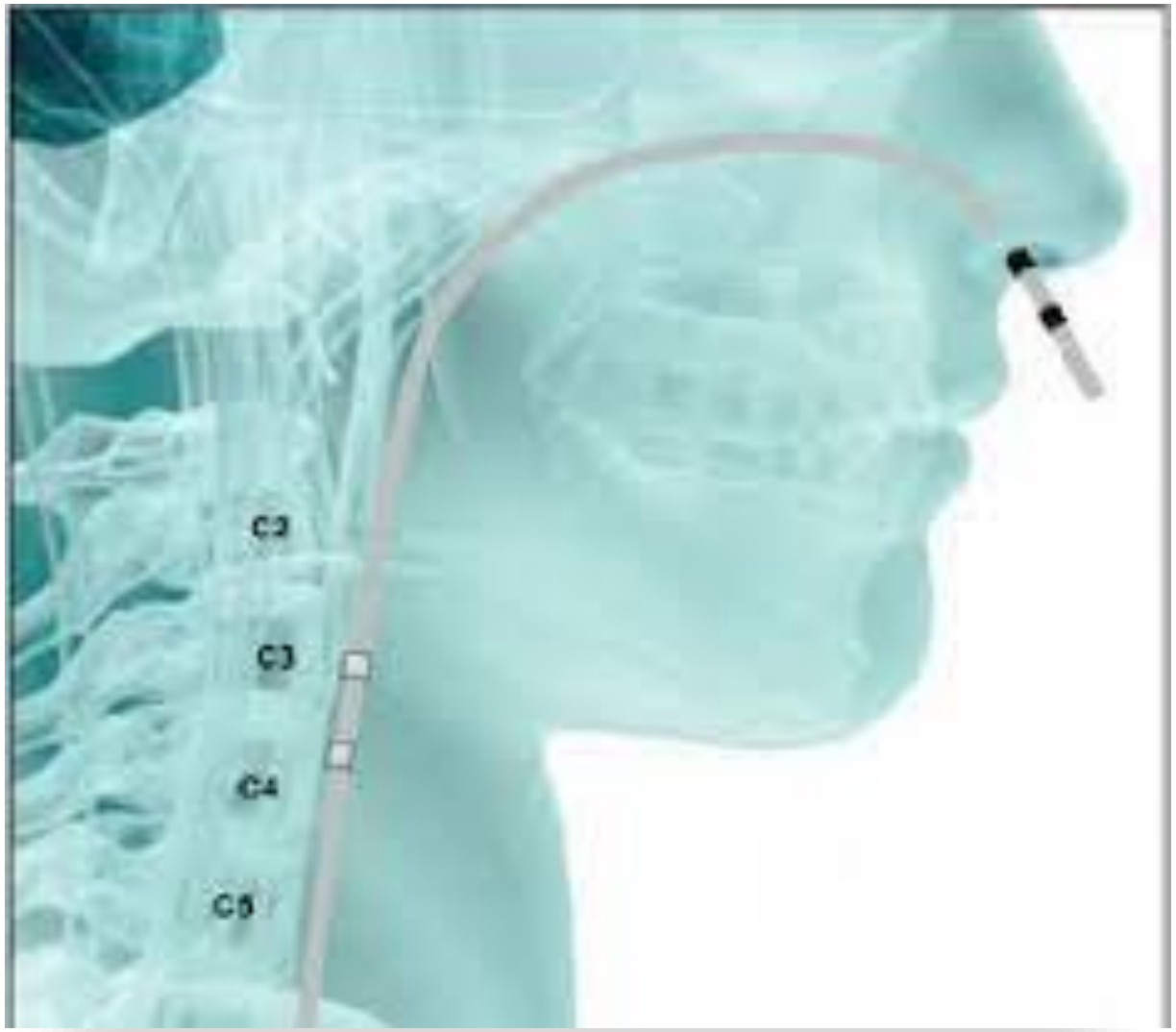
NATIONAL CLINICAL GUIDELINE FOR STROKE
for the United Kingdom and Ireland

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



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**

What's new in rehab and recovery?

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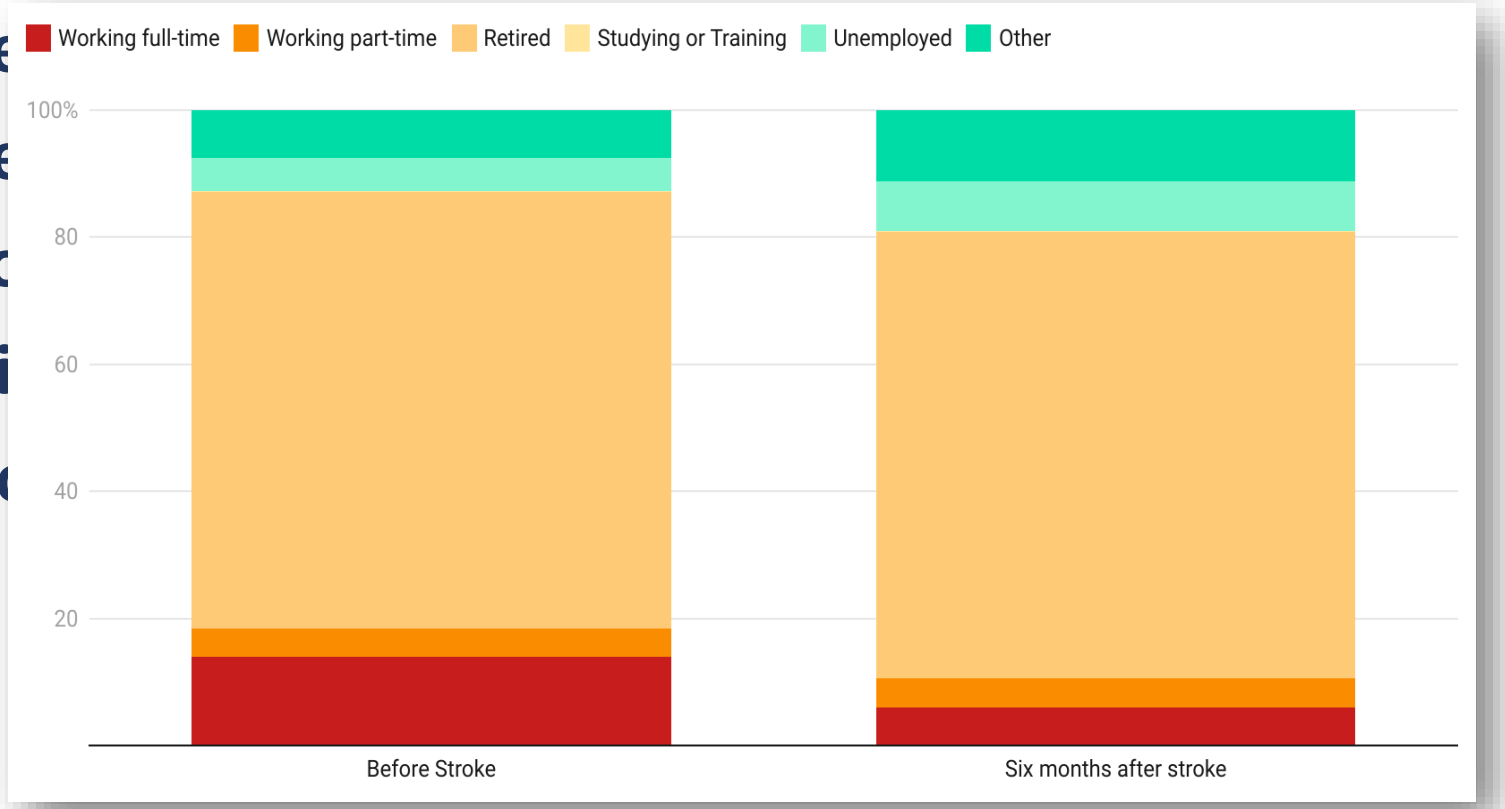

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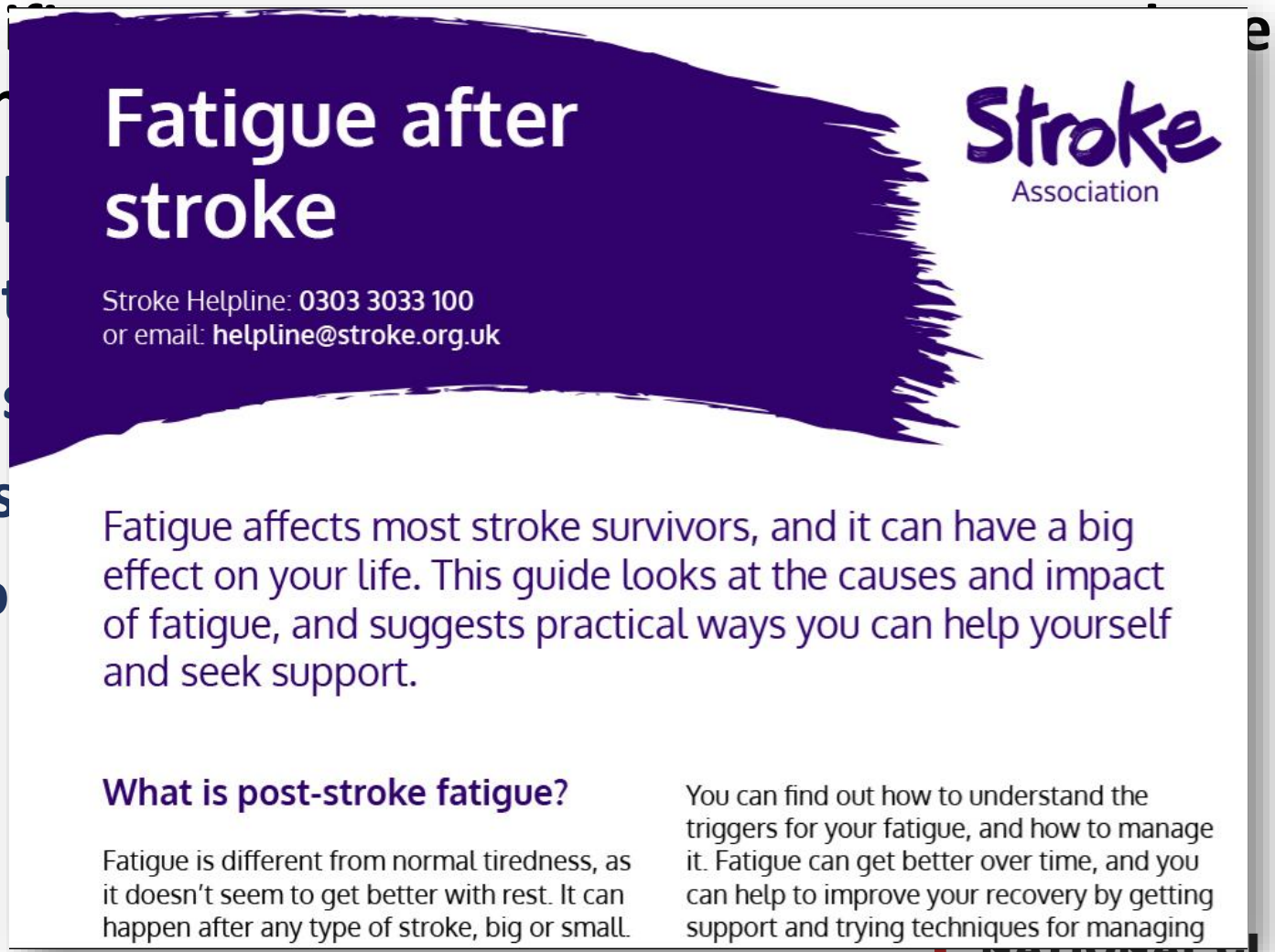

Fatigue after stroke

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

Stroke Association

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

…LINICAL GUIDELINE FOR STROKE
for the United Kingdom and Ireland

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for the United Kingdom and Ireland

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Significant consensus statements on areas where r

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

Percentage of patients

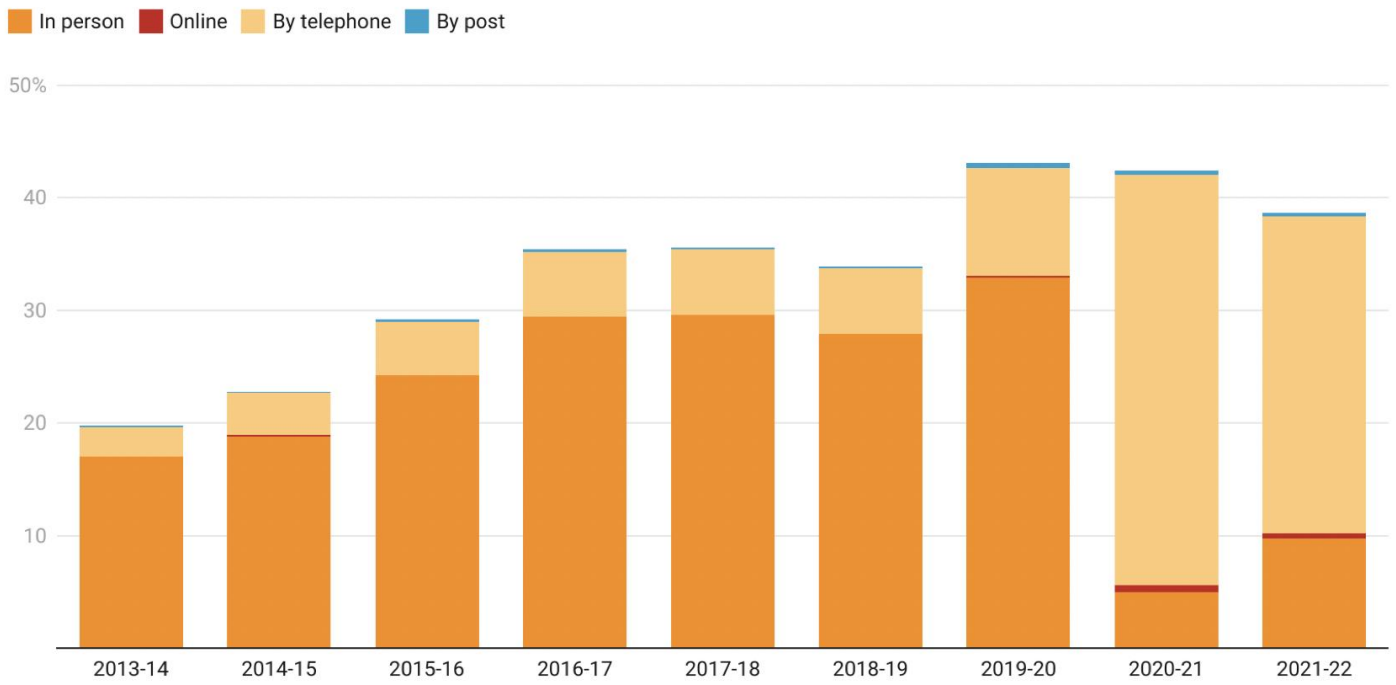

Figure 21: Proportion of patients receiving a follow-up six month after stroke, by follow-up method, 2013 to 2022.

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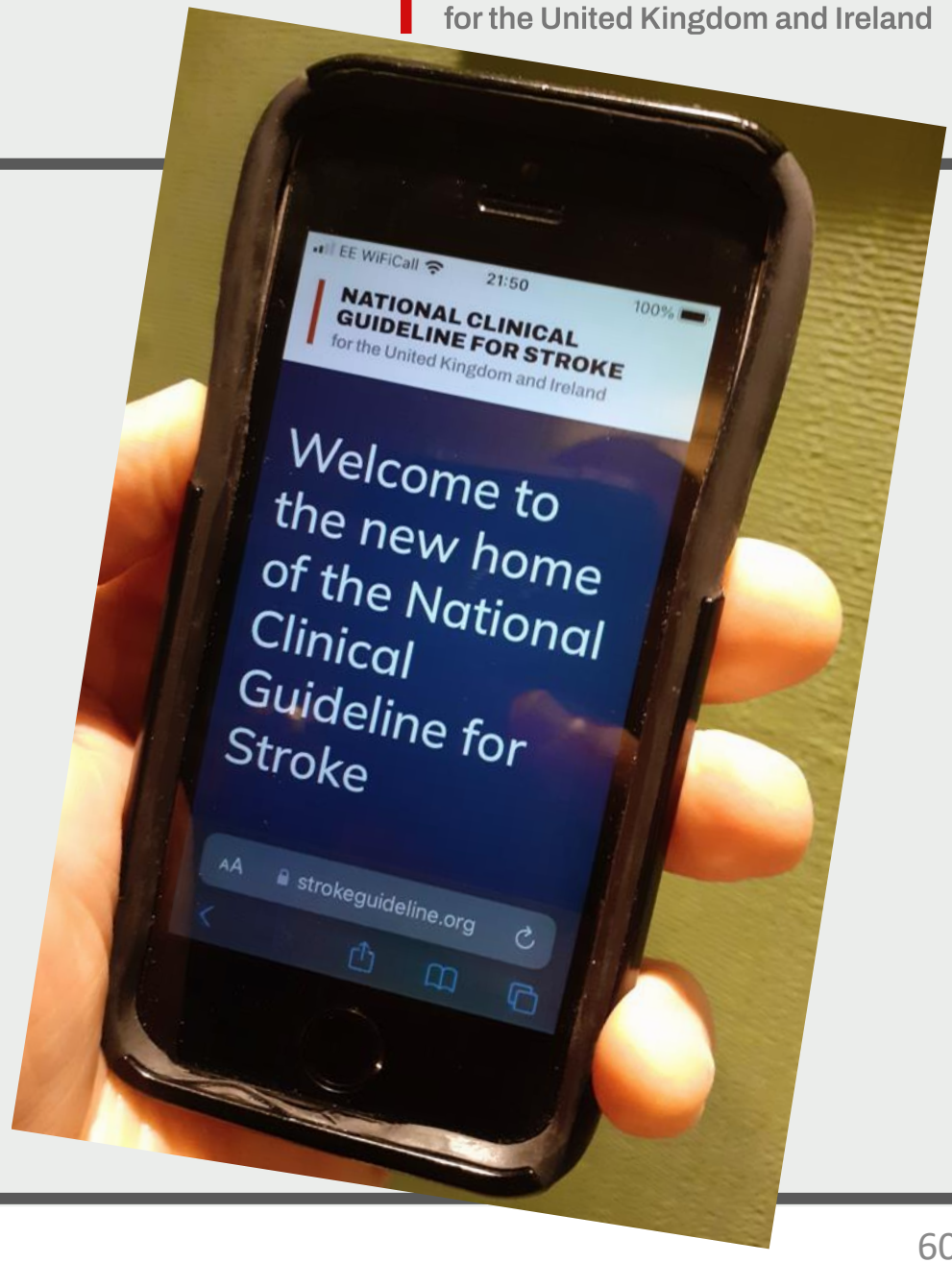
for the United Kingdom and Ireland

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



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1 Department of Health and Social Care, London, UK
2 Scottish Government, Edinburgh, UK
3 Department of Health, Belfast, UK
4 Welsh Government, Cardiff, UK
5 NHS England, London, UK
6 Academy of Medical Royal Colleges, London, UK

Correspondence to: C Whitty
Chris.whitty@dhsc.gov.uk

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Published: 01 February 2023

Restoring and extending secondary prevention

Comprehensive response is needed, across healthcare and beyond

Christopher J M Whitty,[1] Gregor Smith,[2] Michael McBride,[3] Frank Atherton,[4] Stephen H Powis,[5] Helen Stokes-Lampard[6]

The UK, like many European countries, is currently experiencing substantial excess mortality.[1 2] The reasons for this are likely to be multifactorial, including persisting direct and indirect effects of covid-19, surges in flu and respiratory infections, significant pressures on NHS acute services, and reductions in secondary prevention as an inevitable part of the response to covid-19.[3-5] At the start of the pandemic, as services swung necessarily towards the major new threat, it was predicted that the reduction in preventive care would probably cause subsequent indirect delayed mortality, but the immediate response to the pandemic was essential.[6] Studies finding reduced take up of interventions such as antihypertensive drugs in the initial stages of the pandemic are therefore unsurprising.[3]

Considerable efforts are being made to restore secondary prevention and many other areas of medicine, but we need to go further than simply reverting to where we were in 2019. In particular, we must extend the advantages of secondary prevention to groups that missed out even before the pandemic.[7]

Evidence that secondary prevention can substantially reduce disease incidence and progression is some of

Disease prevalence is higher than average in many of these groups so the benefits of secondary prevention are likely to be even greater.[11] This will require creativity in the development and testing of various delivery models.[12] A single approach is unlikely to be successful across all groups, as shown during the rollout of covid-19 vaccines.

Initial identification of individuals at risk does not usually require a skilled healthcare professional, and directing more people into general practice for routine assessment would not be a good use of general practitioner skills or resources. The first diagnostic step could be done in many settings—for example, measuring blood pressure in workplaces or other places people go as part of their daily lives, and using existing health infrastructure such as pharmacies and optometrists. We should make it much easier and more attractive for people to come forward for assessment.

Thirdly, numerous areas of clinical practice still lack evidence based approaches to secondary prevention, including many associated with substantial morbidity or mortality such as mental health and musculoskeletal conditions. A comprehensive

Antiplatelet treatment

- For acute TIA and minor stroke within 24 hours of onset:
  - Clopidogrel + Aspirin for 21 days

  OR
  - Ticagr
- Pushing a
- For long-t
- Consider antiplatelet treatment for vascular prevention after haemorrhage
- Consider clopidogrel resistance if recurrence – use ticagrelor

5.6C

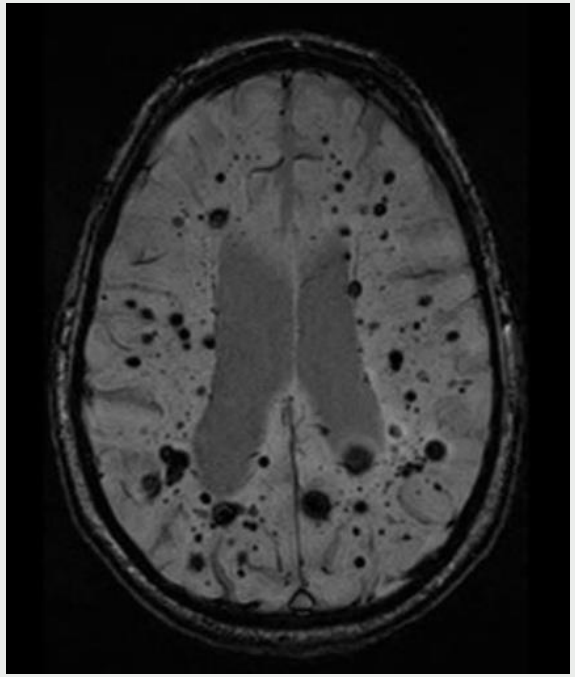
Patients who have a spontaneous (non-traumatic) intracerebral haemorrhage (ICH) whilst taking an antithrombotic (antiplatelet or anticoagulant) medication for the prevention of occlusive vascular events may be considered for restarting antiplatelet treatment beyond 24 hours after ICH symptom onset. **[2023]**

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

OPTIMAS
OPTIMAL TIMING OF ANTICOAGULATION AFTER STROKE

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

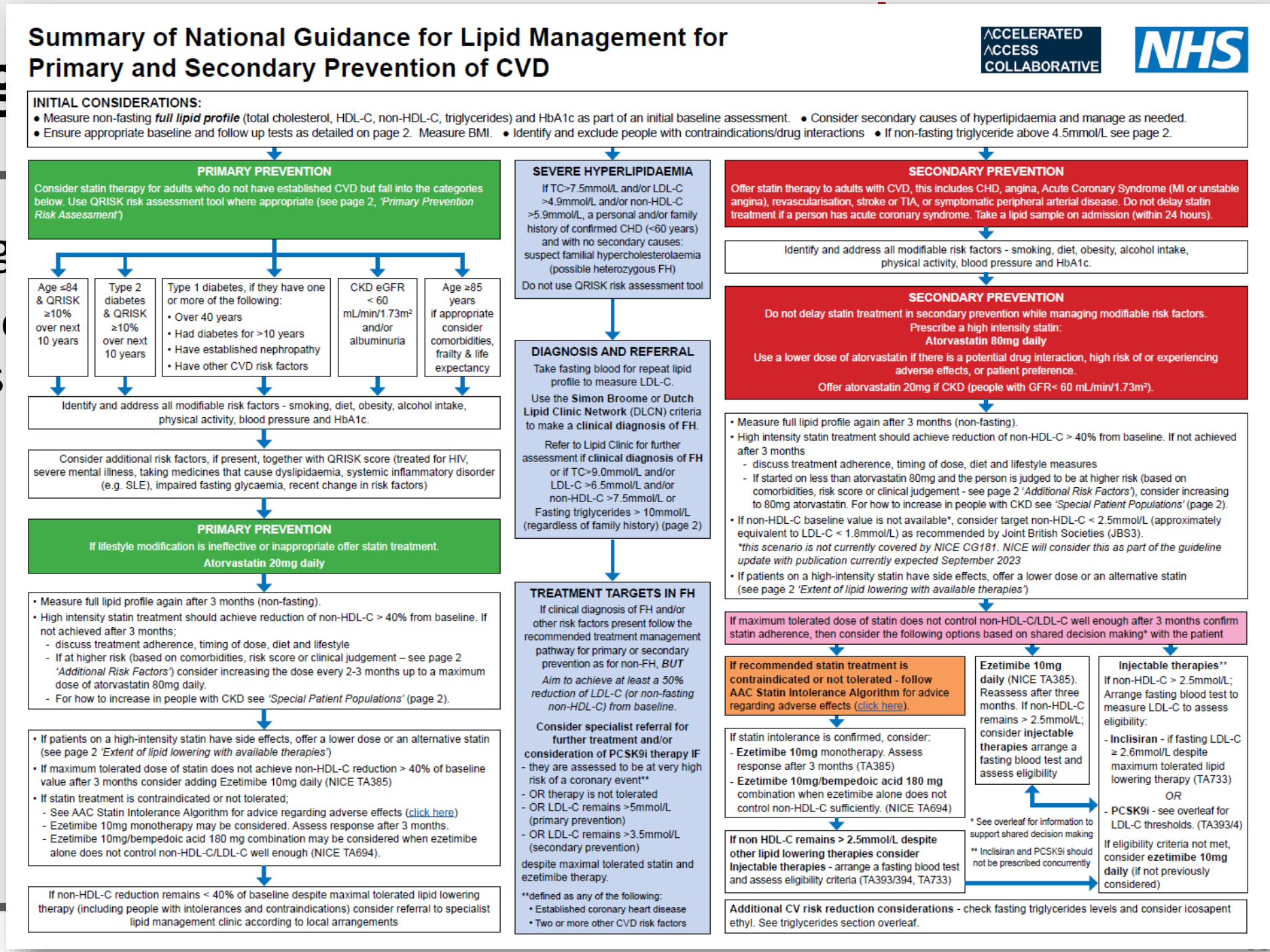


Lipid management

- 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)

Lipid manag

- A new, lower targ
- Early escalation (
  injectables (inclis



Summary of National Guidance for Lipid Management for Primary and Secondary Prevention of CVD

ACCELERATED ACCESS COLLABORATIVE

NHS

INITIAL CONSIDERATIONS:

- Measure non-fasting ***full lipid profile*** (total cholesterol, HDL-C, non-HDL-C, 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/drug 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 ≤84 & QRISK ≥10% over next 10 years
- Type 2 diabetes & 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 < 60 mL/min/1.73m² and/or albuminuria
- Age ≥85 years if appropriate consider comorbidities, frailty & life expectancy

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

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

PRIMARY PREVENTION

If lifestyle modification is ineffective or inappropriate offer statin treatment.

Atorvastatin 20mg daily

- Measure full lipid profile again after 3 months (non-fasting).
- High intensity statin treatment should achieve reduction of non-HDL-C > 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 atorvastatin 80mg daily.
  - For how to increase in people with CKD see *'Special Patient Populations'* (page 2).
- If patients on a high-intensity statin have side effects, offer a lower dose or an alternative statin (see page 2 *'Extent of lipid lowering with available therapies'*)
- If maximum tolerated dose of statin does not achieve non-HDL-C reduction > 40% of baseline value after 3 months consider adding Ezetimibe 10mg daily (NICE TA385)
- If statin treatment is contraindicated or not tolerated;
  - See AAC Statin Intolerance Algorithm for advice regarding adverse effects (click here)
  - Ezetimibe 10mg monotherapy may be considered. Assess response after 3 months.
  - Ezetimibe 10mg/bempedoic acid 180 mg combination may be considered when ezetimibe alone does not control non-HDL-C/LDL-C well enough (NICE TA694).

If non-HDL-C reduction remains < 40% of baseline despite maximal tolerated lipid lowering therapy (including people with intolerances and contraindications) consider referral to specialist lipid management clinic according to local arrangements

SEVERE HYPERLIPIDAEMIA

If TC>7.5mmol/L and/or LDL-C >4.9mmol/L and/or non-HDL-C >5.9mmol/L, a personal and/or family history of confirmed CHD (<60 years) and with no secondary causes: suspect familial hypercholesterolaemia (possible heterozygous FH)

Do not use QRISK risk assessment tool

DIAGNOSIS AND REFERRAL

Take fasting blood for repeat lipid profile to measure LDL-C.

Use the **Simon Broome** 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 non-HDL-C >7.5mmol/L or Fasting triglycerides > 10mmol/L (regardless of family history) (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-HDL-C) from baseline.

Consider specialist referral for further treatment and/or consideration of PCSK9i therapy IF

- they are assessed to be at very high risk of a coronary event**
- OR therapy is not tolerated
- OR LDL-C remains >5mmol/L (primary prevention)
- OR LDL-C remains >3.5mmol/L (secondary prevention)

despite maximal tolerated statin and ezetimibe therapy.

**defined as any of the following:

- Established coronary heart disease
- Two or more other CVD risk factors

SECONDARY PREVENTION

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

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:

Atorvastatin 80mg daily

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

Offer atorvastatin 20mg if CKD (people with GFR< 60 mL/min/1.73m²).

- Measure full lipid profile again after 3 months (non-fasting).
- High intensity statin treatment should achieve reduction of non-HDL-C > 40% from baseline. If not achieved after 3 months
  - discuss treatment adherence, timing of dose, diet and lifestyle measures
  - If started on less than atorvastatin 80mg and the person is judged to be at higher risk (based on comorbidities, risk score or clinical judgement - see page 2 *'Additional Risk Factors'*), consider increasing to 80mg atorvastatin. For how to increase in people with CKD see *'Special Patient Populations'* (page 2).
- If non-HDL-C baseline value is not available*, consider target non-HDL-C < 2.5mmol/L (approximately equivalent to LDL-C < 1.8mmol/L) as recommended by Joint British Societies (JBS3).
  **this scenario is not currently covered by NICE CG181. NICE will consider this as part of the guideline update with publication currently expected September 2023*
- If patients on a high-intensity statin have side effects, offer a lower dose or an alternative statin (see page 2 *'Extent of lipid lowering with available therapies'*)

If maximum tolerated dose of statin does not control non-HDL-C/LDL-C well enough after 3 months confirm statin adherence, then consider the following options based on shared decision making* with the patient

If recommended statin treatment is contraindicated or not tolerated - follow AAC Statin Intolerance Algorithm for advice regarding adverse effects (click here).

If statin intolerance is confirmed, consider:

- **Ezetimibe 10mg** monotherapy. Assess response after 3 months (TA385)
- **Ezetimibe 10mg/bempedoic acid 180 mg** combination when ezetimibe alone does not control non-HDL-C sufficiently. (NICE TA694)

If non HDL-C remains > 2.5mmol/L despite other lipid lowering therapies consider Injectable therapies - arrange a fasting blood test and assess eligibility criteria (TA393/394, TA733)

Ezetimibe 10mg daily (NICE TA385). Reassess after three months. If non-HDL-C remains > 2.5mmol/L; consider **injectable therapies** arrange a fasting blood test and assess eligibility

Injectable therapies**

If non-HDL-C > 2.5mmol/L; Arrange fasting blood test to measure LDL-C to assess eligibility:

- **Inclisiran** - if fasting LDL-C ≥ 2.6mmol/L despite maximum tolerated lipid lowering therapy (TA733)

OR

- **PCSK9i** - see overleaf for LDL-C thresholds. (TA393/4)

If eligibility criteria not met, consider **ezetimibe 10mg daily** (if not previously considered)

* See overleaf for information to support shared decision making

** Inclisiran and PCSK9i should not be prescribed concurrently

Additional CV risk reduction considerations - check fasting triglycerides levels and consider icosapent ethyl. See triglycerides section overleaf.

Lipid manag

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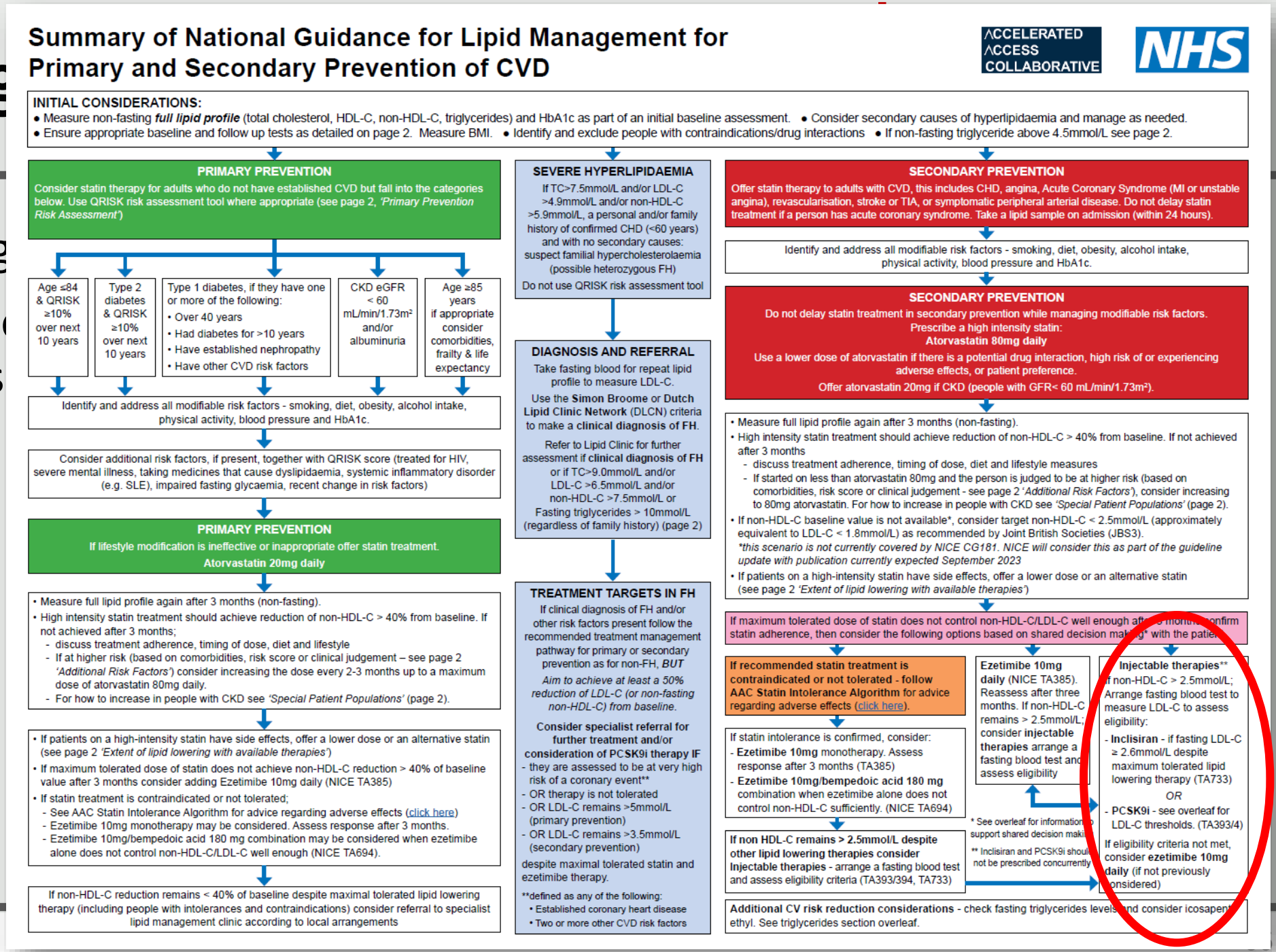
- Early escalation (
  injectables (inclis



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If recommended statin treatment is contraindicated or not tolerated - follow AAC Statin Intolerance Algorithm for advice regarding adverse effects (click here).

If statin intolerance is confirmed, consider:

- **Ezetimibe 10mg** monotherapy. Assess response after 3 months (TA385)
- **Ezetimibe 10mg/bempedoic acid 180 mg** combination when ezetimibe alone does not control non-HDL-C sufficiently. (NICE TA694)

If non HDL-C remains > 2.5mmol/L despite other lipid lowering therapies consider Injectable therapies - arrange a fasting blood test and assess eligibility criteria (TA393/394, TA733)

Ezetimibe 10mg daily (NICE TA385). Reassess after three months. If non-HDL-C remains > 2.5mmol/L; consider **injectable therapies** arrange a fasting blood test and assess eligibility

Injectable therapies** if non-HDL-C > 2.5mmol/L; Arrange fasting blood test to measure LDL-C to assess eligibility:

- **Inclisiran** - if fasting LDL-C ≥ 2.6mmol/L despite maximum tolerated lipid lowering therapy (TA733)

OR

- **PCSK9i** - see overleaf for LDL-C thresholds. (TA393/4)

If eligibility criteria not met, consider **ezetimibe 10mg daily** (if not previously considered)

* See overleaf for information to support shared decision making

** Inclisiran and PCSK9i should not be prescribed concurrently

Additional CV risk reduction considerations - check fasting triglycerides levels and consider icosapent ethyl. See triglycerides section overleaf.

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 a

5.9 A Patients with ischaemic stroke or TIA not already diagnosed w undergo an initial period of cardiac monitoring for a minimum anticoagulation. **[2023]**

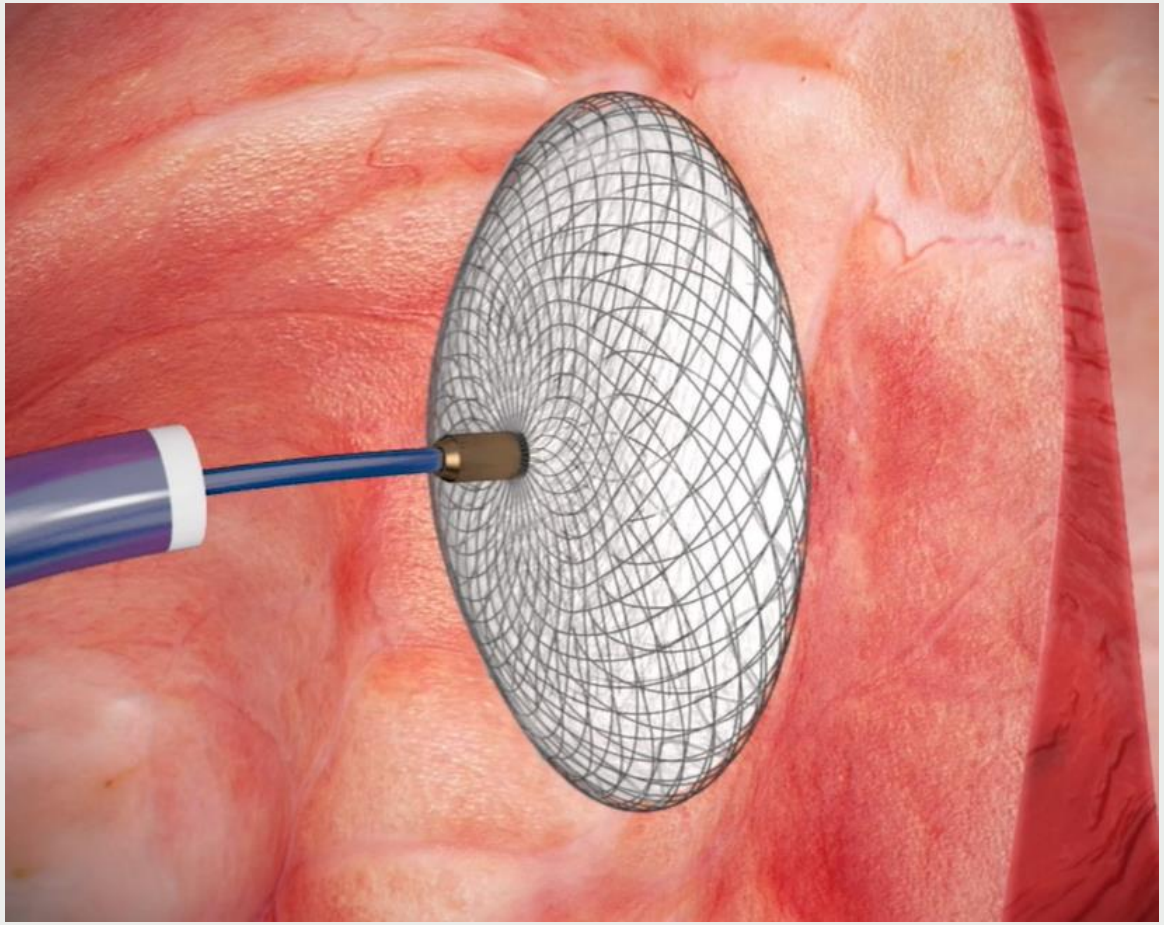
5.9 B Patients with ischaemic stroke or TIA, in whom no other cause comprehensive neurovascular investigation (stroke of undeter and in whom a cardioembolic cause is suspected, should be c sequential or continuous cardiac rhythm monitoring with an e implantable loop recorder if they are appropriate for anticoagu

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

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



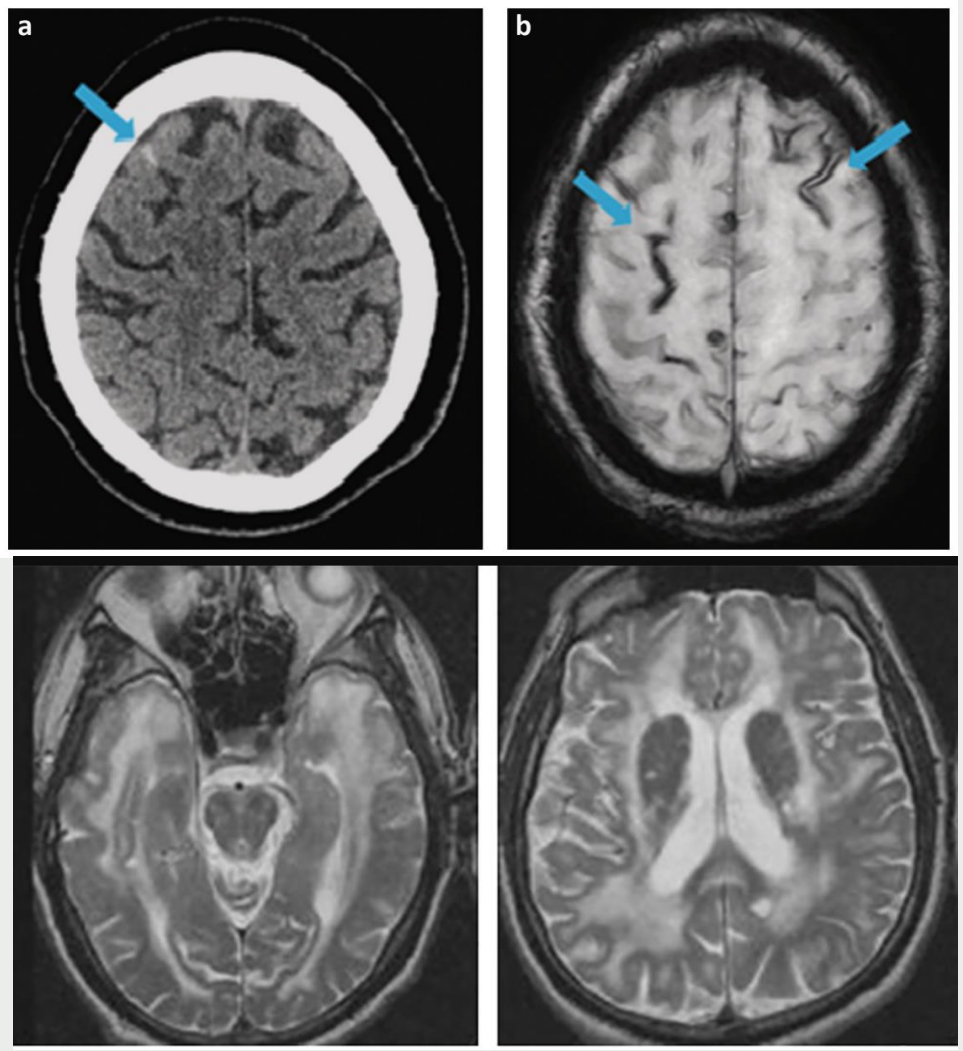
New sections

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