NICE National Institute for
Health and Care Excellence

NICE
guideline

Stroke rehabilitation in adults

NICE guideline
Published: 18 October 2023

www.nice.org.uk/guidance/ng236

Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

This guideline replaces CG162.

This guideline is the basis of QS2 and QS181.

Overview

This guideline covers rehabilitation after stroke for over 16s. It aims to ensure people are assessed for common problems and conditions linked to stroke, and get the care and therapy they need. It includes recommendations on the organisation and delivery of rehabilitation in hospital and the community.

NICE has also produced a guideline on the diagnosis and initial management of stroke transient ischaemic attack in over 16s.

Who is it for?

- Healthcare professionals
- Social care practitioners
- Commissioners and providers
- Voluntary organisations
- All adults and young people aged 16 and over who have had a stroke and their families and carers

Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.1 Organising health and social care for people needing rehabilitation after stroke

Stroke services

1.1.1 People who need rehabilitation after stroke should receive it from a specialist stroke service:

- in a stroke unit and subsequently from a specialist stroke team in the community **or**
- directly from a specialist stroke team in the community if they have left hospital through early supported discharge (where people in an inpatient setting are offered early discharge to continue rehabilitation at home) **or**
- in a level 1 or 2 specialist inpatient neurorehabilitation unit and subsequently from a specialist stroke team in the community. **[2013, amended 2023]**

1.1.2 An inpatient stroke unit should:

- have a dedicated stroke rehabilitation environment
- be led by a core multidisciplinary stroke rehabilitation team (see recommendation 1.1.3) with expertise in working alongside people who have

had a stroke, and their families and carers, to manage the changes experienced as a result of stroke

- provide access to other services that may be needed, for example:
    - audiology
    - continence advice
    - electronic aids (for example remote controls for doors, lights and heating, and communication aids)
    - liaison psychiatry
    - orthotics
    - pharmacy
    - podiatry
    - wheelchair services
- include a multidisciplinary education programme. **[2013, amended 2023]**

The core multidisciplinary stroke rehabilitation team

1.1.3 A core multidisciplinary stroke rehabilitation team should comprise the following professionals with expertise in stroke rehabilitation:

- consultant physicians specialising in stroke, or rehabilitation medicine
- nurses
- physiotherapists
- occupational therapists
- speech and language therapists
- dietitians
- clinical psychologists or clinical neuropsychologists
- orthoptists

- rehabilitation assistants
- social workers. **[2013, amended 2023]**

1.1.4 Throughout the care pathway, document the roles and responsibilities of the multidisciplinary team clearly and communicate these to the person and their family members and carers. **[2013]**

Assessing care and support needs

1.1.5 Health and social care professionals should collaborate to ensure a social care assessment is carried out promptly, where needed, before the person who has had a stroke is transferred from hospital to the community. The assessment should:

- identify any ongoing needs of the person, and their family members and carers, for example, access to benefits, care needs, housing, participation in everyday and community activities, return to work, transport and access to voluntary services
- be documented, with all needs recorded in the person's health and social care plan and a copy provided to the person who has had a stroke.

  For further guidance, see NICE's guideline on care and support of people growing older with learning disabilities. **[2013]**

1.1.6 Offer training in care (for example, in how to move people and to help them with dressing) to family members and carers who are willing and able to be involved in supporting the person after stroke. **[2013]**

1.1.7 Review family members' and carers' training and support needs regularly (as a minimum at the person's 6-month and annual reviews), acknowledging that these needs may change over time. **[2013]**

Transfer of care from hospital to community, including early supported discharge

1.1.8 Once the person has left hospital after having a stroke, continue their care and rehabilitation for as long as it continues to help them achieve their treatment goals. **[2023]**

1.1.9 Offer early supported discharge to people after stroke who can move from a bed to a chair independently or with assistance, as long as a safe and secure environment can be provided. **[2013]**

1.1.10 Early supported discharge should:

- be part of a multidisciplinary stroke rehabilitation service working across hospital and community settings
- ensure therapy is continued at the same intensity and level of support from skilled staff as is provided in hospital
- not result in a delay in delivery of care. **[2013]**

1.1.11 Before and during early supported discharge:

- provide the person after stroke, and their family members and carers, with information about early supported discharge, including details of who to contact if problems arise, to support shared decision making about their care
- assign a member of the early supported discharge team or the stroke rehabilitation service (for example, a stroke key worker) to the person to coordinate their care
- take into account the needs of family members and carers and offer relevant training and support to help reduce caregiver strain, in line with NICE's guideline on supporting adult carers
- be aware, and ensure family members and carers understand, that the person's psychological needs can change after stroke (for recommendations on identifying and managing psychological problems, see the section on psychological functioning). **[2023]**

1.1.12 Before transfer from hospital to home or to a care setting, discuss and agree a health and social care plan with the person after stroke, and their family members and carers (as appropriate), and provide this to all relevant health and social care providers. **[2013]**

1.1.13 Before transfer of care from hospital to home:

- establish that the person has a safe and enabling home environment (for example, check that their home or care home has the necessary equipment, any adaptations have been made, and that carers have the support they need to ensure the person can live as independently as possible) **and**
- accompany the person on a home visit unless their abilities and needs can be identified in other ways, for example, by demonstrating independence in all self-care activities, including meal preparation, while in a hospital unit. **[2013]**

1.1.14 On transfer of care from hospital to the community, provide information to all relevant health and social care professionals and the person after stroke. This should include a summary of the person's rehabilitation progress and current goals and details of their:

- diagnosis and health status
- functional abilities (including communication needs)
- care needs, including washing, dressing, help with going to the toilet and eating
- psychological (cognitive and emotional) needs
- medication needs (including the person's ability to manage their prescribed medicines and any support they need to do so)
- social circumstances, including carers' needs
- mental capacity regarding the transfer decision
- management of risk, including the needs of vulnerable adults
- plans for follow-up, rehabilitation and access to health and social care and voluntary sector services. **[2013]**

1.1.15 Ensure that people after stroke who are transferred from hospital to care homes receive assessment and treatment from stroke rehabilitation and social care services to the same standard as they would receive in their own homes. **[2013]**

1.1.16 Local health and social care providers should have standard operating procedures to ensure the safe transfer and long-term care of people after stroke, including those in care homes. This should include timely exchange of information between different providers using local protocols. **[2013]**

1.1.17 After transfer of care from hospital, people with rehabilitation needs after stroke (including those in care homes) should be followed up within 72 hours by the specialist stroke rehabilitation team to assess the needs of the person and develop shared management plans. **[2013]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect services, see the rationale and impact section on transfer of care from hospital to community, including early supported discharge.

Full details of the evidence and the committee's discussion are in evidence reviews A1 to A4: early supported discharge.

1.2 Planning and delivering stroke rehabilitation

Screening and assessment

1.2.1 When a person is admitted to hospital after stroke, screen for the following and, if problems are identified, take action as soon as possible to ensure their safety and comfort:

- signs of disorientation
- how they should be positioned
- swallowing function
- how they move (for example, from a bed to a chair)
- pressure area risk
- their continence
- their communication, including their ability to understand and follow instructions and to convey their needs and wishes

- their nutritional status and hydration (follow NICE's guidelines on stroke and transient ischaemic attack in over 16s and nutrition support for adults). **[2013]**

1.2.2 Perform a full medical assessment of the person after stroke, including cognition (attention, memory, spatial awareness, apraxia of speech, perception), vision, hearing, muscle tone, strength, sensation and balance. **[2013]**

1.2.3 Carry out a comprehensive assessment of a person after stroke that both identifies and takes into account:

- their previous functional abilities
- changes to, or impairment of, psychological and neuropsychological functioning relating to:
  - cognitive, emotional or behavioural functioning, such as new signs of emotionalism (difficulty controlling emotions which can cause uncontrollable crying or laughter)
  - mental health (for example, the onset of depression, anxiety or post-traumatic stress disorder), including signs indicating an increased risk of suicide (suicidality) such as suicidal thoughts, plans, actions and suicide attempts
  - the way the person is adjusting and coping after stroke
  - communication
- impairment of body functions, including pain
- activity limitations and participation restriction
- environmental factors (social, physical and cultural). **[2013, amended 2023]**

1.2.4 When collecting information from people who have had a stroke on admission and discharge:

- use valid, reliable and responsive tools including the National Institutes of Health Stroke Scale and the Barthel Index
- feed this information back to the multidisciplinary team regularly. **[2013]**

1.2.5 Take into account the impact of stroke on the person's family, friends and carers and, if appropriate, identify sources of support for them. **[2013]**

1.2.6 Inform the family members and carers of people after stroke about their right to a carer's needs assessment. **[2013]**

Setting goals for rehabilitation

1.2.7 Ensure that people after stroke have goals for their rehabilitation that:

- are meaningful and relevant to them
- focus on activity and participation
- are challenging but achievable
- include both short- and long-term elements. **[2013]**

1.2.8 Ensure that goal-setting meetings during stroke rehabilitation:

- are timetabled and held regularly
- involve the person after stroke and, where appropriate, their family members and carers, in discussions. **[2013]**

1.2.9 During goal-setting meetings, ensure people after stroke are provided with:

- an explanation of the goal-setting process
- the information they need in a format that is accessible to them (in line the NHS accessible information standard)
- the support they need to make decisions and take an active part in setting goals. **[2013]**

1.2.10 Give people copies of their agreed goals for stroke rehabilitation after each goal-setting meeting. **[2013]**

1.2.11 Review people's goals at regular intervals during their stroke rehabilitation. **[2013]**

Planning rehabilitation

1.2.12 Provide information and support to enable the person after stroke and their family members and carers (as appropriate) to actively take part in developing their stroke rehabilitation plan. **[2013]**

1.2.13 Review stroke rehabilitation plans regularly in multidisciplinary team meetings. Time these reviews according to the stage of rehabilitation and the person's needs. **[2013]**

1.2.14 Ensure any documentation is tailored to the person after stroke and, as a minimum, includes:

- the person's basic details, including contact details and next of kin
- details of their diagnosis and relevant medical information
- a list of any medicines they are taking or are allergic to
- details of standardised screening assessments (see recommendation 1.2.1)
- information about the person's rehabilitation goals
- the multidisciplinary team's progress notes
- details about a key contact from the stroke rehabilitation team (including their contact details) to coordinate the person's health and social care needs
- discharge planning information (including accommodation needs, aids and adaptations)
- joint health and social care plans, if developed
- details of follow-up appointments. **[2013]**

Intensity of stroke rehabilitation

1.2.15 For information on high-intensity mobilisation during the first 24 hours after the onset of stroke symptoms, see recommendation 1.7.3 in the section on early mobilisation in NICE's guideline on stroke and transient ischaemic attack in over 16s. **[2023]**

1.2.16 Offer needs-based rehabilitation to people after stroke. This should be for at least 3 hours a day, on at least 5 days of the week, and cover a range of multidisciplinary therapy including physiotherapy, occupational therapy and speech and language therapy. **[2023]**

1.2.17 Where it is agreed with the person after stroke that they are unable, or do not wish, to participate in rehabilitation therapy for at least 3 hours a day, on at least 5 days of the week, ensure that any therapy needed is still offered for a minimum of 5 days per week. **[2023]**

1.2.18 Before rehabilitation begins, provide information on:

- the benefits of having intensive therapy after stroke that starts as soon as it is safe to do so **and**
- what the person can expect from the sessions. **[2023]**

1.2.19 Ensure all rehabilitation sessions:

- include activities linked to the person's goals
- are tailored to any ongoing medical needs, including post-stroke fatigue
- take into account any psychological factors (such as the person's mood or motivation on the day of the session).

Base the timing, sequencing and content of the sessions on these goals, interests and needs, with the person's agreement. **[2023]**

1.2.20 Involve families and carers in rehabilitation sessions, when appropriate (see NICE's guideline on patient experience in adult NHS services). **[2023]**

1.2.21 Make special arrangements for people after stroke who have communication or cognitive needs (for example, by holding joint speech and language therapy and physiotherapy sessions for those with communication difficulties). **[2023]**

1.2.22 When planning or delivering rehabilitation for people after they have left hospital:

- check whether they will be at their own home or elsewhere after discharge (for example, a care home or the home of a family member)
- ensure they will be able to travel from where they are currently living to attend sessions at the arranged time and location
- take into account any travel needs or issues they may have and reassess these needs or issues if the person moves location (for example, back to their own home or to a care home). **[2023]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice, see the rationale and impact section on intensity of stroke rehabilitation.

Full details of the evidence and the committee's discussion are in evidence reviews E1 to E5: intensity of rehabilitation.

1.3 Telerehabilitation

1.3.1 Consider telerehabilitation instead of, or as well as, face-to-face therapy, only if:

- the person after stroke agrees to this approach or it is their preferred type of therapy **and**
- it aligns with their rehabilitation goals. **[2023]**

1.3.2 Ensure that anyone taking part in telerehabilitation has, or when needed is provided with, the correct equipment (for example, a loaned laptop) and any training or technical support they need to use it. **[2023]**

1.3.3 Monitor people who are taking part in telerehabilitation to ensure they are:

- benefiting from this method of delivering therapy **and**

- are not developing symptoms or signs of depression. **[2023]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice, see the rationale and impact section on telerehabilitation.

Full details of the evidence and the committee's discussion are in evidence review G: telerehabilitation.

1.4 Providing support and information

1.4.1 Work with the person after stroke, and their family members and carers, to identify their information needs and how to deliver this information. Take into account any specific impairments such as aphasia (loss or impairment of the ability to use and comprehend language) and cognitive impairments. Pace the way information is given to allow time for the person to make an emotional adjustment. **[2013]**

1.4.2 Provide information about local resources (for example, leisure, housing, social services and voluntary organisations) that can help support the needs and priorities of the person after stroke and their family members and carers. **[2013]**

1.4.3 Review the person's information needs at their 6-month and annual stroke reviews, and at the start and end of any therapy. **[2013]**

See the recommendations on continuity of care and relationships, tailoring healthcare services for each patient and enabling patients to actively participate in their care in the NICE guideline on patient experience in adult NHS services. For guidance on supporting informal carers, see NICE's guideline on supporting adult carers.

1.5 Cognitive functioning

1.5.1 Screen people after stroke for cognitive impairment. Where cognitive impairment is identified, carry out a detailed assessment using valid, reliable and responsive tools before designing a treatment programme.

[2013]

1.5.2 Provide education and support for people after stroke, and their families and carers, to help them understand the extent and impact of cognitive impairment, recognising that these may vary over time and in different settings. **[2013]**

Visual inattention

1.5.3 Use standardised assessments and behavioural observation to assess the effect of visual inattention (an inability to orient towards and attend to stimuli, including body parts, on the side of the body affected by stroke) on functional tasks such as mobility, dressing, eating and using a wheelchair. **[2013]**

1.5.4 Use interventions for visual inattention that focus on the relevant functional tasks, taking into account the underlying impairment. For example:

- interventions to help people scan to the neglected side of their visual field, such as brightly coloured lines or highlighter on the edge of the page
- using sounds to alert the person
- repeating tasks such as dressing
- using prism glasses to broaden the field of view. **[2013]**

Memory function

1.5.5 Assess memory and other relevant domains of cognitive functioning (such as executive functions) in people after stroke, particularly where impairments in memory affect everyday activity. **[2013]**

1.5.6 Use interventions for memory and cognitive functions that focus on the relevant functional tasks, taking into account the underlying impairment. Interventions could include:

- increasing the person's own awareness of the memory impairment

- enhancing learning using errorless learning and elaborative techniques (making associations, use of mnemonics and internal strategies related to encoding information such as 'preview, question, read, state, test')
- external aids (for example, diaries, lists, calendars and alarms)
- environmental strategies (using routines and environmental prompts). **[2013]**

Attention function

1.5.7 Assess attention and cognitive functions in people after stroke using standardised assessments. Use behavioural observation to evaluate the impact of any impairment on functional tasks. **[2013]**

1.5.8 Consider attention training for people with attention deficits after stroke. **[2013]**

1.5.9 Use interventions for attention and cognitive functions after stroke that focus on the relevant functional tasks. For example, by minimising distractions and providing prompts related to the task. **[2013]**

1.6 Psychological functioning

1.6.1 Assess the person after stroke for changes to:

- their emotional functioning, such as the onset of emotionalism
- their behaviour
- their mental health including the development of any signs that could indicate an increased risk of suicide (suicidality) such as suicidal thoughts, plans and actions, and suicide attempts
- the way they are adjusting and coping after stroke. **[2013, amended 2023]**

1.6.2 When choosing any intervention for problems with emotional functioning, take into account the type or complexity of the person's neuropsychological presentation and relevant personal history. **[2013]**

1.6.3 Support and educate people and their families and carers to help them make an emotional adjustment after stroke, recognising that their psychological needs may change over time and in different settings. **[2013]**

1.6.4 When new or persisting changes to mood or emotional difficulties are identified at the person's 6-month or annual stroke review, refer them to appropriate services for detailed assessment and treatment. **[2013]**

1.6.5 Manage depression or anxiety in people after stroke who have no cognitive impairment in line with NICE's guidelines on depression in adults with a chronic physical health problem and generalised anxiety disorder and panic disorder in adults. **[2013]**

1.7 Fatigue

1.7.1 Consider a standardised assessment for fatigue in people after stroke in the early stage of their rehabilitation programme and at their 6-month stroke review. **[2023]**

1.7.2 Consider 1 of the following for the assessment:

- the Fatigue Severity Scale
- the Fatigue Assessment Scale
- the Modified Fatigue Impact Scale. **[2023]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice, see the rationale and impact section on fatigue.

Full details of the evidence and the committee's discussion are in evidence review B: optional tool for the assessment of fatigue.

1.8 Vision

1.8.1 Offer people who are in hospital after stroke a specialist orthoptist assessment as soon as possible. If this cannot be done before discharge, offer the person an urgent outpatient appointment. **[2023]**

1.8.2 Offer eye movement therapy to people who have persisting hemianopia (blindness in 1 half of the visual field of 1 or both eyes) after stroke. **[2013, amended 2023]**

1.8.3 When advising people with visual problems after stroke about driving, consult the Driver and Vehicle Licensing Agency (DVLA) regulations. **[2013]**

For a short explanation of why the committee made the 2023 recommendation and how it might affect practice, see the rationale and impact section on vision.

Full details of the evidence and the committee's discussion are in evidence review C: routine orthoptist assessment.

1.9 Hearing

1.9.1 Screen people for hearing problems within the first 6 weeks after stroke. **[2023]**

1.9.2 Consider the Handicap Hearing Inventory in the Elderly or Amsterdam Inventory Auditory of Disability questionnaires for screening. **[2023]**

1.9.3 During screening, ask the person, and their family members and carers, about any changes to their hearing since the stroke. **[2023]**

1.9.4 Refer people with hearing difficulties for an audiology assessment, in line with NICE's guideline on hearing loss in adults. **[2023]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice, see the rationale and impact section on hearing.

Full details of the evidence and the committee's discussion are in evidence review D: optimal tool for hearing assessment.

1.10 Mouth care

1.10.1 Assess oral hygiene in people after stroke using national or local protocols. **[2023]**

1.10.2 Encourage people after stroke to do the following at least twice a day:

- brush their teeth and gums, using an electric or battery-powered toothbrush if needed
- use mouthwash and oral gels with antibacterial and antifungal properties, if needed. **[2023]**

1.10.3 Ensure that a suitably trained healthcare professional, family member or carer delivers or supervises mouth care for people after stroke who cannot, or find it difficult to, follow a mouth care regimen. **[2023]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice, see the rationale and impact section on mouth care.

Full details of the evidence and the committee's discussion are in evidence review J: oral hygiene interventions.

1.11 Swallowing

1.11.1 Assess swallowing in people after stroke in line with NICE's guideline on stroke and transient ischaemic attack in over 16s. **[2013]**

1.11.2 Provide information to people with dysphagia (difficulty in swallowing) after stroke, and their families and carers, on what the condition is and its risks. **[2023]**

1.11.3 Give families and carers information on how they can help someone who is coughing or choking while eating or drinking. **[2023]**

1.11.4 If the person has dysphagia and is unable to take tablets, review the need for the medication and, if it is still needed, change either its formulation or the route of administration. **[2023]**

1.11.5 Support people who have oropharyngeal dysphagia (OPD) to eat and drink as safely as possible, using 1 or more of the following methods (as advised by a dysphagia-trained healthcare professional):

- adaptions to their physical position
- modifying fluid intake (for example, taking small sips or drinking thickened fluids)
- modifying their diet (for example, changing the texture of the food)
- adapting the way food and drink is served (for example, serving food with different cutlery)
- using compensatory strategies and manoeuvres appropriate for the person (for example, the Mendelsohn manoeuvre). **[2023]**

1.11.6 Offer behavioural exercises (for example, chin tuck against resistance) to people with OPD for at least 5 days per week. **[2023]**

1.11.7 Consider physical stimulation (for example, thermal or tactile stimulation) for people with OPD for at least 5 days per week. **[2023]**

1.11.8 Ensure people with dysphagia after stroke are supported in following an effective mouth care regimen, because this decreases the risk of aspiration pneumonia (see the section on mouth care). **[2013]**

1.11.9 Healthcare professionals with relevant skills and training in the diagnosis, assessment and management of swallowing disorders should regularly monitor and reassess people with dysphagia after stroke who are having modified food and liquid until they are stable (this recommendation is from NICE's guideline on nutrition support for adults). **[2013]**

1.11.10 Provide nutrition support to people with dysphagia in line with NICE's guidelines on nutrition support for adults and stroke and transient ischaemic attack in over 16s. **[2013]**

1.11.11 If the person with dysphagia is at risk of aspiration but wishes to eat and drink without the assistance of aids and interventions (such as the methods listed in recommendations 1.11.5 to 1.11.7 for people with OPD):

- respect their choice (in line with NICE's guideline on patient experience in adult NHS services) **and**
- follow the recommendations on putting shared decision making into practice and communicating risks, benefits and consequences in NICE's guideline on shared decision making. **[2023]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on swallowing.

Full details of the evidence and the committee's discussion are in evidence review I: eating and drinking.

1.12 Communication

1.12.1 Screen people for communication difficulties within 72 hours of onset of stroke symptoms. **[2013]**

1.12.2 Each stroke rehabilitation service should devise a standardised protocol to screen for communication difficulties in people after stroke. **[2013]**

1.12.3 Refer people with suspected communication difficulties after stroke to a speech and language therapist for detailed analysis of any impairments and assessment of their impact. **[2013]**

1.12.4 Provide appropriate information, education and training to the multidisciplinary team to enable them to support and communicate effectively with people who have communication difficulties and their families and carers. **[2013]**

1.12.5 Speech and language therapy for people after stroke should be led and supervised by a specialist speech and language therapist working collaboratively with other appropriately trained people (for example, speech and language therapy assistants, carers and friends, or members of the voluntary sector). **[2013]**

1.12.6 Provide opportunities for people with communication difficulties after stroke to have conversations and social contact with people who have the training, knowledge, skills and behaviours to support them. This should be in addition to the opportunities provided by families, carers and friends. **[2013]**

1.12.7 Speech and language therapists should assess people experiencing severe communication difficulties after stroke to see if they could benefit from using a communication aid or other technologies (for example, home-based computer therapies or mobile apps). **[2013]**

1.12.8 Consider a computer-based programme (or apps) tailored to individual goals and circumstances in relation to word finding, alongside face-to-face speech and language therapy. **[2023]**

1.12.9 Provide communication aids to people who could benefit from them after stroke and offer training in how to use them. **[2013]**

1.12.10 Tell people with communication difficulties after stroke about community-based communication and support groups (such as those provided by voluntary organisations) and encourage them to participate in them. **[2013]**

1.12.11 Speech and language therapists should:

- provide individualised therapy for specific communication impairments such as aphasia or dysarthria (difficulty in articulating words)
- help people after stroke to use and enhance their remaining language and communication abilities
- teach other methods of communicating, such as gestures, writing and using communication props
- coach those around the person after stroke (including family members, carers, and health and social care staff) to develop supportive communication skills to maximise the person's communication potential

- help people with aphasia or dysarthria, and their families and carers, to adjust to communication impairment
- support people with communication difficulties to rebuild their identity
- support people to access information that enables decision making. **[2013]**

1.12.12 When persisting communication difficulties are identified at the person's 6-month or annual stroke review, refer them back to a speech and language therapist for detailed assessment, and offer treatment if they could benefit from it. **[2013]**

1.12.13 Help and enable people with communication difficulties after stroke to express their everyday needs and wishes, and support them to understand and participate in both everyday and major life decisions. **[2013]**

1.12.14 Ensure that environmental barriers to communication are minimised for people after stroke. For example, make sure signage is clear and background noise is limited. **[2013]**

1.12.15 Make sure that all written information (including that relating to medical conditions and treatment) is adapted for people with aphasia after stroke. This should include, for example, appointment letters, rehabilitation timetables and menus. **[2013]**

1.12.16 Offer training in communication skills (such as slowing down, not interrupting and using communication props, gestures or drawing) to those who regularly communicate with people who have aphasia after stroke. **[2013]**

For a short explanation of why the committee made the 2023 recommendation and how it might affect practice, see the rationale and impact section on communication.

Full details of the evidence and the committee's discussion are in evidence review K: computer-based tools for speech and language therapy.

1.13 Movement

1.13.1 Provide physiotherapy for people after stroke who have weakness in their trunk or upper or lower limbs, sensory disturbance or balance difficulties that affect their movement. **[2013]**

1.13.2 People with movement difficulties after stroke should be treated by physiotherapists with the relevant skills and training in diagnosis, assessment and management. **[2013]**

1.13.3 Continue to treat people with movement difficulties until they are able to maintain or progress function either independently or with assistance from others (for example, rehabilitation assistants, family members, carers or fitness instructors). **[2013]**

Strength training

1.13.4 Consider strength training for people with muscle weakness after stroke. This could include progressive strength building through increasing repetitions of body weight activities (for example, sit-to-stand repetitions), weights (for example, progressive resistance exercise), or resistance exercise on machines such as stationary cycles. **[2013]**

Fitness training

1.13.5 Encourage people to participate in physical activity after stroke. **[2013]**

1.13.6 Assess people who are able to walk and are medically stable after stroke for cardiorespiratory and resistance training that is appropriate to their individual goals. **[2013]**

1.13.7 Cardiorespiratory and resistance training for people after stroke should be started by a physiotherapist who can give them instructions on how to continue the programme independently. **[2013]**

1.13.8 If people after stroke choose to continue with an exercise programme independently, ensure physiotherapists supply any necessary information about interventions and adaptations to the provider so they can make sure the programme is:

- safe for the person **and**
- tailored to their needs and goals.

  This information may be given through written instructions, telephone conversations or a joint visit with the exercise provider and the person, depending on the needs and abilities of both. **[2013]**

1.13.9 Tell people who are participating in fitness activities after stroke about common, potential problems, such as shoulder pain, and advise them to seek advice from their GP or therapist if these occur. **[2013]**

Wrist and hand splints

1.13.10 Do not routinely offer wrist and hand splints to people with upper limb weakness after stroke. **[2013]**

1.13.11 Consider wrist and hand splints for people at risk after stroke (for example, people who have hands that are immobile due to weakness or high tone), to:

- maintain joint range, soft tissue length and alignment
- increase soft tissue length and passive range of movement
- facilitate function (for example, a hand splint to assist grip or function)
- aid care or hygiene (for example, by enabling access to the palm)
- increase comfort (for example, using a sheepskin palm protector to keep fingernails away from the palm of the hand). **[2013]**

1.13.12 Ensure wrist and hand splints used by people after stroke are fitted by appropriately trained healthcare professionals, and a review plan is established. **[2013]**

1.13.13 Teach the person after stroke, and their family members and carers, how to put the splint on and take it off, care for it and monitor for signs of redness and skin breakdown. Provide a point of contact for the person if concerned. **[2013]**

Electrical stimulation therapy for the upper limb

1.13.14 Do not routinely offer people after stroke electrical stimulation for their hand or arm. **[2013]**

1.13.15 Consider a trial of electrical stimulation therapy as part of a comprehensive rehabilitation programme for people who have evidence of muscle contraction after stroke but cannot move their arm against resistance. **[2013]**

1.13.16 Continue electrical stimulation therapy if the person's strength and their ability to practise functional tasks (for example, maintaining range of movement, or improving grasp and release) is found to be improving. **[2013]**

1.13.17 If a trial of electrical stimulation therapy is appropriate, ensure the treatment is guided by a qualified rehabilitation professional. **[2013]**

Robot-assisted arm training

1.13.18 Do not offer robot-assisted arm training as part of an upper limb rehabilitation programme. **[2023]**

For a short explanation of why the committee made the 2023 recommendation and how it might affect practice, see the rationale and impact section on robot-assisted arm training.

Full details of the evidence and the committee's discussion are in evidence review M: robot-assisted arm training.

Constraint-induced movement therapy

1.13.19 Consider constraint-induced movement therapy for people after stroke who have movement of 20 degrees of wrist extension and 10 degrees of finger extension. Be aware of potential adverse events (such as falls, low mood and fatigue). **[2013]**

Repetitive task training

1.13.20 Offer people after stroke repetitive task training on a range of activities for upper limb weakness (such as tasks that involve reaching, grasping, pointing, moving and manipulating objects) and lower limb weakness (such as sit-to-stand transfers, walking and using stairs). **[2013]**

Walking therapies and group circuit training

1.13.21 Offer walking training to people after stroke who are able to walk, with or without assistance, to help them build endurance and move more quickly. **[2013]**

1.13.22 Consider treadmill training, with or without body weight support, as an option for people after stroke who are able to walk with or without assistance. **[2013]**

1.13.23 In addition to one-to-one walking therapy for people after stroke who are able to walk, with or without assistance, consider a programme of group circuit training that:

- includes an educational element (for example, advice on preventing falls) **and**
- involves interaction with other participants to create an environment of peer support. **[2023]**

For a short explanation of why the committee made the 2023 recommendation and how it might affect practice, see the rationale and impact section on walking therapies and group circuit training.

Full details of the evidence and the committee's discussion are in evidence review L: circuit training for walking.

Electromechanical gait training

1.13.24 Offer electromechanical gait training to people after stroke only in the context of a research study. **[2013]**

Ankle–foot orthoses

1.13.25 Consider ankle–foot orthoses (devices that support or correct limb function) for people who have difficulty with swing-phase foot clearance after stroke (for example, tripping and falling) or stance-phase control (for example, knee and ankle collapse or knee hyper-extensions) that affects walking. **[2013]**

1.13.26 Assess the ability of the person to put on the ankle–foot orthosis or ensure they have the support needed to do so. **[2013]**

1.13.27 Assess the effectiveness of the ankle–foot orthosis for the person, in terms of comfort, speed and ease of walking. **[2013]**

1.13.28 Assessment for and treatment with ankle–foot orthoses should only be carried out as part of a stroke rehabilitation programme and performed by qualified professionals. **[2013]**

Electrical stimulation for the lower limb

1.13.29 Follow NICE's interventional procedures guidance on functional electrical stimulation for drop foot of central neurological origin. **[2013]**

Mirror therapy for the upper or lower limb

1.13.30 Consider mirror therapy for people with muscle weakness in their upper or lower limbs after a stroke as an adjunct to their rehabilitation programme. **[2023]**

1.13.31 If provided, start mirror therapy within the first 6 months after a stroke. Sessions should be:

- around 30 minutes long, held at least 5 times per week over 4 weeks **and**

- supervised initially and, if necessary, for longer. **[2023]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice, see the rationale and impact section on mirror therapy for the upper or lower limb.

Full details of the evidence and the committee's discussion are in evidence review Q: mirror therapy.

Music therapy and interventions

NICE has made a recommendation for research about music therapy for people after a first stroke or recurrent strokes.

For a short explanation of why the committee made this recommendation for research, see the rationale section on music therapy and interventions.

Full details of the evidence and the committee's discussion are in evidence review N: music therapy.

1.14 Managing shoulder pain

1.14.1 Provide information for people after stroke, and their families and carers, on how to prevent pain or trauma to the shoulder if they are at risk of developing shoulder pain (for example, if they have upper limb weakness and spasticity). **[2013]**

1.14.2 Assess people with shoulder pain after stroke to identify its cause and use the results of the assessment to decide how to manage the pain. **[2023]**

1.14.3 Encourage or help the person to adapt their position to help ease shoulder pain. **[2013, amended 2023]**

1.14.4 Consider 1 or more of the following options for managing shoulder pain:

- taping
- neuromuscular electrical stimulation (NMES)
- intra-articular corticosteroid injection
- nerve block (local anaesthetic). **[2023]**

For guidance on managing neuropathic pain, see NICE's guideline on neuropathic pain in adults.

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice, see the rationale and impact section on managing shoulder pain.

Full details of the evidence and the committee's discussion are in evidence review O: shoulder pain.

1.15 Spasticity

1.15.1 Provide information on spasticity for people after stroke, and their families and carers, including details about what it is and what can make it better or worse. **[2023]**

1.15.2 Assess whether spasticity in people after stroke is focal (that is, it affects a specific limb or part of a limb) or generalised. **[2023]**

1.15.3 Discuss options for managing focal or generalised spasticity in the person after stroke with the multidisciplinary team. **[2023]**

1.15.4 Consider 1 or more of the following as part of a goal-directed plan to manage focal or generalised spasticity in people after stroke:

- stretching the affected limb or limbs
- splints, when needed (see the section on wrist and hand splints)
- advice on identifying and managing triggers of spasticity. **[2023]**

1.15.5 For people who have focal spasticity of the upper limb after stroke, consider treatment with either Dysport at a dose of up to 1,000 units per treatment or with Xeomin at a dose of up to 400 units per treatment, unless they are already receiving a different type or dose of botulinum toxin A. Ensure that:

- the dose is spread across appropriate injection sites in the affected limb **and**
- people do not receive more than 1 treatment every 3 months **and**
- response to the treatment is monitored and it is stopped if it is not effective.

  For people who are already receiving botulinum toxin A of a different type or dose, continue with this treatment if it is effective. **[2023]**

1.15.6 Consider a trial of NMES, functional electrical stimulation (FES) or transcutaneous electrical nerve stimulation (TENS) for people after stroke with focal spasticity. **[2023]**

1.15.7 Consider oral baclofen for people after stroke with generalised spasticity but monitor closely for adverse effects. **[2023]**

1.15.8 Refer people after stroke to a specialist spasticity service if:

- they have ongoing spasticity that has not responded to treatment
- other treatments are not tolerated
- the person has complex needs in relation to spasticity (for example, if the injection is for small muscles or treatment is needed for spasticity-related pain). **[2023]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice, see the rationale and impact section on spasticity.

Full details of the evidence and the committee's discussion are in evidence review P: spasticity.

1.16 Self-care

1.16.1 Provide occupational therapy for people after stroke who are likely to benefit from it and to address difficulties with activities of daily living. Therapy may consist of restorative or compensatory strategies.

- Restorative strategies may include:
  - encouraging people with hemisensory inattention (a difficulty in detecting or acting on information on 1 side of their personal space) to attend to the neglected side
  - encouraging people with arm weakness to use both arms
  - establishing a dressing routine for people with difficulties such as poor concentration, hemisensory inattention or dyspraxia (difficulty in planning and executing movement) which make dressing problematic.
- Compensatory strategies may include training people how to:
  - dress one-handed
  - use devices such as bathing and dressing aids. **[2013]**

1.16.2 People who have difficulties with activities of daily living after stroke should have regular monitoring and treatment by occupational therapists with core skills and training in the analysis and management of activities of daily living. Treatment should continue until the person's condition is stable or able to progress independently. **[2013]**

1.16.3 Assess people after stroke for their equipment needs and to see whether their family or carers need training to use the equipment. This assessment should be done by an appropriately qualified professional. Equipment may include hoists, chair raisers and small aids such as long-handled sponges. **[2013]**

Returning to work

1.16.4 Identify any return-to-work issues for the person as soon as possible after stroke. Review these regularly and manage them actively, for example by:

- identifying the physical, cognitive, communication and psychological demands of the job (such as multi-tasking by answering emails and telephone calls in a busy office)
- identifying any problems that affect work performance (for example, physical limitations, anxiety, fatigue preventing attendance for a full day at work, cognitive impairments preventing multi-tasking, and communication problems)
- tailoring interventions (for example, teaching strategies to support multi-tasking or memory difficulties, teaching the use of voice-activated software for people with difficulty typing, and delivery of work simulations)
- providing information about the Equality Act 2010 and support available (for example, an access-to-work scheme)
- workplace visits and liaison with employers to make reasonable adjustments such as provision of equipment and phased return to work. **[2013]**

1.16.5 Consider a referral to a return-to-work programme for people who were working before they had a stroke. **[2023]**

1.16.6 Manage people's return to work or long-term absence after stroke in line with NICE's guideline on workplace health. **[2013]**

For a short explanation of why the committee made the 2023 recommendation and how it might affect practice, see the rationale and impact section on returning to work.

Full details of the evidence and the committee's discussion are in evidence review H: community participation interventions.

Self-management interventions

NICE has made a recommendation for research about self-management interventions for people after stroke.

For a short explanation of why the committee made this recommendation for research, see the rationale section on self-management interventions.

Full details of the evidence and the committee's discussion are in evidence review F: self-management.

1.17 Long-term health and social support

1.17.1 Explain to people after stroke that they can self-refer, usually with the support from a health or care professional working in primary care (for example, a GP or a social prescriber) or named contact from the stroke rehabilitation service, if they need further help or support. **[2013]**

1.17.2 Provide information so that people after stroke, and their family and carers, can recognise the complications of the condition, including frequent falls, spasticity, shoulder pain and incontinence. **[2013]**

1.17.3 Encourage people to focus on life after stroke and help them to achieve their goals. This may include:

- giving them information about voluntary organisations that can support them
- helping them to participate in community activities, such as shopping, civic engagements, sports and leisure pursuits, visiting their place of worship and joining stroke support groups
- supporting their social roles, for example, in work, education, volunteering, leisure activities, within their family and with sexual relationships
- providing information about transport and driving (including DVLA requirements; see the UK Government's web page on stroke and driving). **[2013]**

1.17.4 Manage incontinence after stroke in line with NICE's guidelines on urinary incontinence in neurological disease and faecal incontinence in adults. **[2013]**

1.17.5 Review the health and social care needs of people after stroke, and the needs of their carers, at 6 months and then annually. These reviews should cover participation in activities of everyday life to ensure that people's goals are met. **[2013]**

For guidance on the secondary prevention of stroke, see NICE's guidelines on cardiovascular disease, hypertension in adults, type 2 diabetes in adults and atrial fibrillation. For advice on involving people in decisions about prescribed medications and supporting adherence, follow NICE's guideline on medicines adherence.

Community participation programmes

1.17.6 Consider referral for people after stroke, and their families and carers (if appropriate), to community participation programmes that:

- are suited to the person's rehabilitation goals **and**
- take into account their needs, views and preferences in line with NICE's guideline on patient experience in adult NHS services. **[2023]**

For a short explanation of why the committee made the 2023 recommendation and how it might affect practice, see the rationale and impact section on community participation programmes.

Full details of the evidence and the committee's discussion are in evidence review H: community participation interventions.

Terms used in this guideline

This section defines terms that have been used in a particular way for this guideline.

Apraxia of speech

Difficulty in controlling the muscles for speech because of damage to the brain, which can affect speech or changes in the rhythm or rate of speaking.

Community participation programmes

Programmes encouraging involvement in social activities that either take place outside the home or are non-domestic. They focus on providing education, support or practice in areas such as:

- participation in peer support groups
- political or civic roles
- leisure activities like exercise, art or music
- involvement in faith-based groups or organisations
- education and learning
- walking or using other means of transport, such as buses, mobility scooters or taxis
- employment or voluntary work.

Level 1 or 2 specialist inpatient neurorehabilitation unit

Specialist rehabilitation services that are led or supported by consultants who specialise in rehabilitation medicine. Level 1 units are for people with highly complex rehabilitation needs who typically require longer lengths of stay than other people in hospital after a stroke, such as those in level 2 units. They have a higher number of specialist staff with the expertise, as well as access to specialist facilities, to provide high-intensity rehabilitation that meets the needs of people admitted to these units. Level 2 units are for people who need more help, support and care from a rehabilitation team than they would get on a stroke unit but their needs are less than people who are normally admitted to a level 1 unit.

Stroke unit

An environment in which multidisciplinary stroke teams deliver care in a dedicated ward which has a bed area, dining area, gym, and access to assessment kitchens.

Telerehabilitation

Rehabilitation delivered remotely instead of face-to-face interaction between the person after stroke and the healthcare professional. Components can include interventions, supervision, education, consultations and counselling. This may be delivered in real time (synchronous) or with delay where immediate response is not required (asynchronous).

Recommendations for research

Key recommendations for research

1 Intensity of rehabilitation – therapy for 7 days a week

What is the clinical and cost effectiveness of delivering rehabilitation for 7 days a week compared to 5 days a week for people after a stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on intensity of stroke rehabilitation.

Full details of the evidence and the committee's discussion are in evidence reviews E1 to E5: intensity of rehabilitation.

2 Intensity of rehabilitation – psychological therapy

What is the clinical and cost effectiveness of more intensive cognitive and psychological therapy compared to usual care for people after a stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on intensity of stroke rehabilitation.

Full details of the evidence and the committee's discussion are in evidence reviews E1 to E5: intensity of rehabilitation.

3 Tool for assessing fatigue in people with communication difficulties

For people after stroke with communication difficulties, what is the optimal tool for assessing fatigue? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on fatigue.

Full details of the evidence and the committee's discussion are in evidence review B: optimal tool for fatigue.

4 Computer-based speech and language therapy

What is the clinical and cost effectiveness of computer-based tools to treat problems with speech (dysarthria) and all domains of language (aphasia) for people with communication difficulties after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on communication.

Full details of the evidence and the committee's discussion are in evidence review K: computer-based tools for speech and language therapy.

5 Management of shoulder pain by cause

For people with different causes of shoulder pain after stroke, what is the clinical and cost effectiveness of interventions in reducing pain? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on managing shoulder pain.

Full details of the evidence and the committee's discussion are in evidence review O: shoulder pain.

Other recommendations for research

6 Tools for fatigue

What is the clinical and cost effectiveness of the Fatigue Severity Scale, Fatigue Assessment Scale and Modified Fatigue Impact Scale in informing the management of fatigue in people after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on fatigue.

Full details of the evidence and the committee's discussion are in evidence review B: optimal tool for fatigue.

7 Handheld hearing screeners

What is the clinical and cost effectiveness, and the diagnostic test accuracy, of using handheld hearing screeners to assess hearing in people after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on hearing.

Full details of the evidence and the committee's discussion are in evidence review D: optimal tool for hearing.

8 Prevalence of hearing problems

What is the prevalence of hearing problems in people after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on hearing.

Full details of the evidence and the committee's discussion are in evidence review D: optimal tool for hearing.

9 Intensity of rehabilitation – swallowing therapy

What is the clinical and cost effectiveness of more intensive swallowing therapy compared to usual care for people after a stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on intensity of stroke rehabilitation.

Full details of the evidence and the committee's discussion are in evidence reviews E1 to E5: intensity of rehabilitation.

10 Self-management interventions

What is the clinical and cost effectiveness of self-management interventions for people after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on self-management interventions.

Full details of the evidence and the committee's discussion are in evidence review F: self-management.

11 Impact of telerehabilitation on cognition and mood

What is the impact of telerehabilitation on cognition and mood for people after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on telerehabilitation.

Full details of the evidence and the committee's discussion are in evidence review G: telerehabilitation.

12 Swallowing – free water protocol

What is the clinical and cost effectiveness of the free water protocol to support people with drinking after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on swallowing.

Full details of the evidence and the committee's discussion are in evidence review I: eating and drinking.

13 Swallowing – neurostimulation

What is the clinical and cost effectiveness of neurostimulation (pharyngeal electrical stimulation, transcranial direct current stimulation, transcranial magnetic stimulation) to improve swallowing in people with oropharyngeal dysphagia after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on swallowing.

Full details of the evidence and the committee's discussion are in evidence review I: eating and drinking.

14 Swallowing – neuromuscular electrical stimulation

What is the clinical and cost effectiveness of neuromuscular electrical stimulation (NMES) to improve oesophageal dysphagia after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on swallowing.

Full details of the evidence and the committee's discussion are in evidence review I: eating and drinking.

15 Swallowing – acupuncture

What is the clinical and cost effectiveness of acupuncture to improve swallowing in people with oropharyngeal dysphagia after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on swallowing.

Full details of the evidence and the committee's discussion are in evidence review I: eating and drinking.

16 Music therapy and interventions

What is the clinical and cost effectiveness of music therapy for people after a first stroke or recurrent strokes? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on music therapy and interventions.

Full details of the evidence and the committee's discussion are in evidence review N: music therapy.

17 Diagnostic assessment to inform management of shoulder pain

What is the clinical and cost effectiveness of diagnostic assessment to decide the choice of management for shoulder pain after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on managing shoulder pain.

Full details of the evidence and the committee's discussion are in evidence review O: shoulder pain.

18 Spasticity – acupuncture and electroacupuncture

What is the clinical and cost effectiveness of acupuncture and electroacupuncture to treat spasticity in people who have had a stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on spasticity.

Full details of the evidence and the committee's discussion are in evidence review P: spasticity.

19 Spasticity – botulinum toxin A

What is the clinical and cost effectiveness of Botox, Dysport and Xeomin compared to each other and usual care for people with focal spasticity after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on spasticity.

Full details of the evidence and the committee's discussion are in evidence review P: spasticity.

20 Spasticity – electrotherapy

What is the clinical and cost effectiveness of neuromuscular electrical stimulation (NMES), transcutaneous electrical stimulation (TENS) and functional electrical stimulation (FES) compared to usual care for people who have spasticity after a stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on spasticity.

Full details of the evidence and the committee's discussion are in evidence review P: spasticity.

21 Groups that benefit from mirror therapy

Which groups of people benefit from mirror therapy after stroke? **[2023]**

For a short explanation of why the committee made this recommendation for research, see the rationale section on mirror therapy for the upper or lower limb.

Full details of the evidence and the committee's discussion are in evidence review Q: mirror therapy.

Rationale and impact

These sections briefly explain why the committee made the recommendations and how they might affect practice or services.

Transfer of care from hospital to community, including early supported discharge

Recommendations 1.1.8 and 1.1.11

Why the committee made the recommendations

Qualitative evidence showed that rehabilitation support after hospital is sometimes withdrawn after a set period, even when the person feels this is too early and that they need more rehabilitation. The committee recognised this can make some feel abandoned but also that therapists' time is limited and must be used effectively. Weighing up these factors, the committee agreed that care and rehabilitation should be continued after hospital as long as they help people meet their rehabilitation goals. This will ensure therapy is not withdrawn too soon for those who still need it.

The 2013 guideline recommended early supported discharge for some people. For the 2023 update, the committee looked at new evidence which found the process:

- had the clinically important benefit of reducing physical dependency (the need for support with activities at home such as transfers, mobility and washing) as well as length of hospital stay
- either improved, or had no negative impact on, health-related quality of life
- reduced psychological distress.

The evidence also showed no difference between early supported discharge and usual care in mortality, the person or carer's quality of life or the Caregiver Strain Index (which is used to assess carers' wellbeing), or to hospital readmission rates. An increase in falls, which is a clinically important harm, was seen in a limited number of studies. However, the committee noted this did not cause an increase in the rates of hospital readmission. The published evidence also suggested that early supported discharge was cost effective when compared to usual care.

Qualitative evidence also found that people after stroke, their families and carers, and healthcare professionals saw early supported discharge as beneficial. They viewed it as an opportunity for the person to go home and be in a familiar setting sooner, and as a way of motivating the person by providing new challenges. They found it made no difference to the intensity of the therapy on offer (when delivered appropriately). In light of all the evidence in favour of early supported discharge, the committee agreed to retain the 2013 recommendations.

The committee also noted that the way early supported discharge is offered and organised can still vary between settings. The evidence also found that the level of coordination between services can affect outcomes. Better coordination between all services involved in the care of people after stroke led to reduced mortality and levels of physical dependency, when compared to usual care. Services that did not coordinate as well reported higher rates of mortality and no reduced levels of physical dependency, when compared to usual care. The qualitative evidence reviewed in the study also highlighted some factors that could improve coordination of care (such as having a dedicated care coordinator assigned to the individual), as well as factors that may encourage the use of early supported discharge. Many of these were already captured in the 2013 guideline but some important ones were not, so the committee agreed to list these factors in a new recommendation.

How the recommendations might affect services

Current systems for early supported discharge vary, and some places do not have dedicated early supported discharge coordinators. Some parts of the country provide better access to early supported discharge services than others. Changes will therefore be required to improve access. The way services work may need to change, and the degree of change needed will vary depending on what services currently provide. Offering care and rehabilitation to those who need it after they have left hospital, if it continues to help them meet their rehabilitation goals, is current practice so is not expected to have a significant resource impact.

Return to recommendations

Intensity of stroke rehabilitation

Recommendations 1.2.15 to 1.2.22

Why the committee made the recommendations

The committee agreed that intensive rehabilitation had clinically important benefits. Based on the evidence, they agreed that people should be offered combined therapies for at least 3 hours a day, 5 days a week. However, they also emphasised that therapy should be provided for as little or as long as the person requires it and should be based on their needs, to ensure they can get the most out of their rehabilitation.

The 2013 guideline recommended at least 45 minutes of physiotherapy for 5 days a week for some people. However, evidence reviewed for the 2023 update found that more intensive physiotherapy improved quality of life and activities of daily living. The optimal intensity of physiotherapy was shown to be between 1 and 2 hours a day, for at least 5 days per week, with the proviso that there may be days when the person is not able to take part for the full duration. The evidence also showed that people after stroke (and their families and carers) felt that more intensive physiotherapy helped them recover faster, especially if it was delivered in the first 6 months after stroke. Although longer physiotherapy sessions will require more resources, they were still found to be cost-effective for the NHS. The committee agreed that longer physiotherapy sessions could be included in a recommended minimum of 3 hours total therapy a day if this was needed.

The committee also reviewed evidence on the optimal duration of occupational therapy and speech and language therapy sessions, but this was limited to a small number of studies and therefore, insufficient to recommend any increase in the timings alone. However, there was nothing to suggest that the intensity should be less than a minimum of 45 minutes a day, 5 days per week, the timings recommended in the 2013 guideline. On reviewing this evidence together with that on physiotherapy and noting that some people might benefit from joint therapy sessions, the committee recommended a total therapy time rather than specifying timings for each form of therapy. They also noted that the evidence did not distinguish between people with and without communication difficulties, and agreed that it could apply to both groups. There was not enough evidence to recommend rehabilitation for 7 days instead of 5 days a week. However, the committee made recommendation for research into the clinical and cost effectiveness of providing rehabilitation for 7 days a week. They also made recommendations for research into the possible benefits of more intensive cognitive and psychological therapy, and of more intensive swallowing therapy.

The studies also revealed several factors that could encourage people, or prevent them from, fully participating in rehabilitation therapies. These were supported by the personal experiences of committee members and were included in the recommendations to encourage effective delivery of rehabilitation.

How the recommendations might affect practice

Current practice is inconsistent. The 2013 guideline recommended that people should initially be offered at least 45 minutes of each relevant stroke rehabilitation therapy for a minimum of 5 days a week. However, this is not always provided to people after stroke. The 2023 recommendation increases the recommended amount of therapy to a total of at least 3 hours spread across the therapy types. This could lead to a change in practice which may impact on resources, although this will be balanced out by long-term health benefits and potential care savings.

Return to recommendations

Telerehabilitation

Recommendations 1.3.1 to 1.3.3

Why the committee made the recommendations

The committee looked at evidence on telerehabilitation used both alone and in addition to face-to-face sessions. It found telerehabilitation to be beneficial in improving quality of life and in activities of daily living. However, the committee also stressed that telerehabilitation should only be used if it is the person's preferred option. The relationship between the therapist and the person after stroke should also be maintained, with the option of using in-person therapy instead if needed. As with face-to-face therapy, telerehabilitation should aim to meet the goals the person has agreed with their therapist. Some people may not have the right equipment for this type of therapy so it should be made available to them when needed. The committee also wanted to emphasise that anyone involved in telerehabilitation (including families or carers) should get training in how to use the equipment if they need it.

Some detrimental effects were noticed in some people who had telerehabilitation, particularly the effect on mood. The reasons for this are unknown. Therefore, the committee agreed that anyone receiving telerehabilitation should be monitored carefully for symptoms or signs of depression. They also made a recommendation for research on the impact of telerehabilitation on cognition and mood.

How the recommendations might affect practice

The recommendations reflect current practice as many stroke services use telerehabilitation, with its usage increasing in many areas of practice since the start of the COVID-19 pandemic. Therefore, these recommendations will not lead to big changes to current practice, depending on the type of communication technology used. In some areas, the recommendations could lead to an increase in telerehabilitation as an alternative to face-to-face appointments.

The resource impact of this will probably be neutral. Some people will need extra equipment at home (although this equipment may be loaned by providers and then returned and reused over time) and some resource will be needed to train and support people after stroke and carers who will use it. Currently, telephone calls and videoconferencing are widely used for rehabilitation and require low or no additional resources. The use of virtual reality (VR) programmes or interactive games, which could incur a higher cost, is less common. Telerehabilitation will also reduce travel costs for both therapists and people after stroke, and could be a more efficient use of therapists' time.

Return to recommendations

Fatigue

Recommendations 1.7.1 and 1.7.2

Why the committee made the recommendations

People often experience fatigue after stroke and find its effects disabling. While more research is needed on specific treatments for fatigue, the committee agreed that a standardised assessment would:

- help with identifying and characterising the symptom

- help ensure the rehabilitation team take fatigue into account when setting goals for people after stroke
- provide a clear baseline measure for treatment trials.

The Fatigue Assessment Scale, Fatigue Severity Scale and Modified Fatigue Impact Scale were found to be valid and reliable tools that were easy to use and effective in discriminating between the physical, cognitive and mood disorders that can interact with fatigue. The committee agreed any of the 3 could be used to assess fatigue while the person was taking part in their rehabilitation programme and during their 6-month stroke review. They also made a recommendation for more research into the clinical and cost effectiveness of these 3 scales.

The committee did not specify when the first assessment should take place as this could not be determined from the evidence they reviewed. However, they agreed it should not be done too quickly after the person's stroke since fatigue levels may be changing rapidly at that stage, but should be done soon enough to help plan ongoing rehabilitation. The timing will need to be determined on an individual basis.

The committee was unable to recommend a specific tool to measure fatigue in people with communication difficulties because the evidence was inadequate. There was evidence for a vertical numeric rating scale that used a faces rating scale but this only examined 1 domain of fatigue. Therefore, the committee made a recommendation for research on tools for fatigue in people with communication difficulties.

How the recommendations might affect practice

Current practice is inconsistent. Only some services assess fatigue and there is no standardised measurement tool. The recommendation to consider an assessment for fatigue during rehabilitation and the 6-month review may require a change from current practice by many providers. The Fatigue Assessment Scale, Fatigue Severity Scale and Modified Fatigue Impact Scale are short assessments that can be filled in by the person after stroke, so the associated costs will be low.

Return to recommendations

Vision

Recommendation 1.8.1

Why the committee made the recommendation

No evidence that specifically addressed the clinical and cost effectiveness of visual screening after stroke was identified, so the committee made conclusions based on their own knowledge and experience.

Many people experience problems with their eyesight after stroke. These are often identified by stroke units during either an examination by an orthoptist or an assessment carried out by another healthcare professional using basic methods or a validated screening tool. The committee agreed that eyesight problems were more likely to be identified during an orthoptist assessment when compared to other forms of assessment. Significant issues are often identified at a later stage if they were missed initially, but by this time they may have already affected the person's quality of life and their ability to fully participate in stroke rehabilitation. Eyesight problems also pose potential safety risks, including the possibility of driving accidents.

Where possible, the committee agreed that people should be assessed by an orthoptist before leaving hospital. However, they recognised this might not be possible and would cause significant delays at discharge if it was the only option available. Therefore, they agreed that people who do not have the assessment before discharge should instead be given an urgent referral so they can have the same assessment as an outpatient.

How the recommendation might affect practice

Current practice is inconsistent across the country because many stroke units do not have a designated orthoptist. Therefore, the recommendation will lead to a change in practice. However, the time and costs involved in offering an orthoptic assessment on the stroke unit is the same as that for assessment using basic screening and validated screening tools.

Return to recommendation

Hearing

Recommendations 1.9.1 to 1.9.4

Why the committee made the recommendations

Many people have hearing problems after stroke which often go undetected and can significantly impact on their quality of life and ability to engage with rehabilitation. The committee agreed it was important to identify hearing problems as soon as possible. However, it may be difficult to do this adequately in the period immediately after admission when the person's condition is not stable, and when they may be in a noisy hospital environment. Based on their experience and expertise, the committee agreed that people should have a hearing screening within the first 6 weeks following stroke. They also highlighted the need to involve family and carers during screening because they can often help identify hearing problems. They also made a recommendation for research on the prevalence of hearing problems in people after stroke.

The committee looked at evidence from a small study comparing the diagnostic accuracy of 4 types of screening – 2 types of hearing questionnaire, a handheld hearing screener combined with 1 questionnaire, and a handheld hearing screener alone. All options were effective in ruling out hearing problems, but none were as accurate as audiologist's assessment in diagnosing hearing difficulties after stroke. The committee agreed to include details of the questionnaires used in the study as these are inexpensive and could help identify people who need further assessment. However, they did not recommend handheld hearing screeners as an option because of their cost and a lack of availability. They instead made a recommendation for research on their clinical and cost effectiveness, and diagnostic accuracy.

The committee agreed that people experiencing hearing problems after stroke should be assessed by an audiologist in line with standard practice.

How the recommendations might affect practice

Current practice is inconsistent. Hearing assessments after stroke are not standardised and often do not include the use of a questionnaire, so this may lead to a change in practice. It is also possible that there will be an increase in audiology referrals.

Return to recommendations

Mouth care

Recommendations 1.10.1 to 1.10.3

Why the committee made the recommendations

The committee agreed by consensus that mouth hygiene should be formally assessed in people after stroke because poor hygiene can lead to increase in significant problems including aspiration pneumonia. There are different protocols available for this but the evidence did not compare these, so the committee did not specify which should be used.

The type and frequency of mouth care varied across studies, but they all showed reductions in mortality in people who received a standardised oral hygiene regimen compared with those who received usual care. Some studies also found mouth care interventions reduced cases of pneumonia, gingivitis and oral infections. The evidence on frequency of mouth care was less clear although most studies used a twice-daily mouth care regimen, which the NHS recommends for all people. The specific components of the mouth care regimen differed across studies, but none involved the use of a manual brush alone and most included an electric or battery-powered toothbrush and mouthwash. Oral gel with antibacterial or antifungal properties was also shown to help reduce mortality and occurrence of pneumonia in a study based in an NHS setting.

Trained healthcare professionals supervised mouth care in all studies. Therefore, the committee agreed it should be delivered or supervised, when needed, by people with appropriate training and that this could include family members or carers.

How the recommendations might affect practice

The recommendations reflect current best practice. For some, these recommendations will not change current practice (for example, care for people who are able to follow a more intensive mouth care regimen). However, the level of care provided to people who find it difficult to follow a more intensive regimen is currently inconsistent, so these recommendations are likely to involve a change in practice in this area. Healthcare professionals may also need additional time to supervise or help deliver mouth care more frequently for some people, including those using additional interventions such as electric toothbrushes, mouthwash and oral gels with antibacterial or antifungal properties. There will also be an additional cost in purchasing these items for services that do not currently use them.

Return to recommendations

Swallowing

Recommendations 1.11.2 to 1.11.7, and recommendation 1.11.11

Why the committee made the recommendations

Dysphagia can be distressing for people after stroke and their family members and carers. Therefore, based on their expertise and experience, the committee agreed it would be useful to provide them with information about the condition. It is also important to give families and carers advice on what to do if someone is having difficulties while eating and drinking.

A study with 204 participants identified some adaptations that could reduce mortality, chest infections and improve oropharyngeal dysphagia (OPD). Based on this limited amount of evidence and the committee's expert opinion, they agreed that 1 or more of these adaptations could be used to support safe swallowing. They also highlighted that, where needed, the use of oral medication should be reviewed and the formulation or route of administration could be changed so the person can continue with the medication.

The committee noted that behavioural exercises and physical stimulation are effective in reducing mortality, chest infections and aspiration caused by OPD, and can help people to return to a normal diet. There was a substantial amount of evidence to support the use of behavioural exercises, but only a limited amount of evidence to support using physical stimulation. However, the committee noted that both types of intervention were often used as usual care across all the evidence. For the studies, both interventions were provided for an average of 30 minutes a day, 5 days a week, for 2 to 4 weeks, during the acute and subacute periods after stroke. Based on this and taking the evidence reviewed for the recommendations on intensity of stroke rehabilitation into account, the committee agreed that behavioural exercises should be offered for at least 5 days a week to maximise its benefits. However, they agreed that physical simulation should only be considered as an option for people with OPD because of the limited evidence available.

On evaluating other treatments, the committee noted that neuromuscular electrical stimulation (NMES) improved quality of life, reduced dysphagia and chest infections, and helped people to return to a normal diet. The evidence on the effect of NMES on mortality was uncertain because of small trial sizes and short follow-up times. The committee noted that, while a clinically important harm was reported in the evidence, this was unlikely to be related to the use of NMES because the intervention was found to reduce dysphagia and chest infections, and it was unlikely that the intervention would cause death in another way. Taking into account the lack of quality-of-life data required to conduct health economic modelling, the potential high cost of the intervention, the size of the trials and the low quality of the evidence, the committee agreed further research is needed before the use of NMES can be recommended. The evidence on other interventions was insufficient. Therefore, the committee made recommendations for research to gather more information about the use of NMES, as well as neurostimulation and acupuncture, for dysphagia.

The committee also looked at the evidence for the free water protocol. This intervention aims to provide some people who have dysphagia and are suspected to have, or known to be at risk of, aspiration with the option of consuming unthickened water between mealtimes. The committee did not recommend its use because, although the evidence was promising, it was limited to 2 small studies (with a total of 34 participants) which found the approach did not reduce chest infections or improve hydration when compared to usual care. Therefore, they made a recommendation for research to investigate the use of the free water protocol, particularly in studies with a larger number of participants.

The committee also acknowledged that people with dysphagia may want to eat and drink without the use of any aid or intervention, despite the acknowledged risks associated with this. They agreed that they should be supported in making an informed decision on how to proceed.

How the recommendations might affect practice

Some recommendations are consistent with current practice, including the use of adaptations to support people who have OPD with eating and drinking. Others will lead to a change in current practice. Increasing the intensity of behavioural exercise and physical stimulation from the previously recommended 3 days a week to 5 days is likely to have a cost implication.

Return to recommendations

Communication

Recommendation 1.12.8

Why the committee made the recommendation

The evidence for computer-based tools for speech and language therapy varied in quality and was uncertain because of the complexity of the interventions and the risks of bias and imprecision. However, clinically important benefits were seen when interventions focused on, or included, word finding. The overall cost effectiveness of this type of therapy was uncertain, but data from a large UK-based study showed it was cost effective when it had a word finding component. The committee agreed that computer-based therapy aimed at improving word finding could be given in addition to face-to-face speech and language therapy rather than instead of it, as this was the approach taken in most studies. However, therapy would need to be adapted to the person's needs (for example, activities could include words that are important to them).

The committee did not recommend the use of computer-based tools for other goals relating to speech and language therapy but instead made a recommendation for research on the clinical and cost effectiveness of these tools for managing communication difficulties after stroke.

How the recommendation might affect

Computer-based therapy is not routinely used by speech and language therapists in the NHS, so this recommendation could lead to a change in practice.

Return to recommendations

Robot-assisted arm training

Recommendation 1.13.18

Why the committee made the recommendation

Extensive studies have shown that robot-assisted arm training can improve arm strength, including grip strength. However, the committee were not convinced that the clinical benefits of using such devices outweighed those achieved by physiotherapy of similar intensity. The evidence also found robot-assisted arm training did not improve arm function or the ability to complete daily activities – improvements the committee agreed would be more important to people after stroke. The studies did not reveal any other benefits to using these devices, for example, in improving measures of quality of life or activities of daily living, or in the incidence of spasticity.

These devices are expensive to purchase and maintain, and a large study found their use was not cost effective. In view of this, and the wide range of studies that showed they had limited clinical benefits, the committee decided not to recommend their use.

How the recommendation might affect practice

Currently, only a few stroke units have access to robot-assisted arm training devices and this recommendation should reduce or discourage their use. Overall, it is unlikely that the recommendation will lead to a widespread change in current practice.

Return to recommendation

Walking therapies and group circuit training

Recommendation 1.13.23

Why the committee made the recommendation

The evidence base for group circuit training was large and there was considerable variation in group sizes and participant-to-staff ratios, as well as the type, duration and intensity of the exercises on offer. It was not possible to recommend the optimal number of staff who should be involved as this was not consistently reported across studies. The quality of the evidence was also low because of the small size of trials and risk of bias. However, the committee agreed there was enough evidence to recommend group circuit training as an option in addition to one-to-one walking therapy.

Some of the training in the studies included an educational element, such as advice on self-management, preventing falls or avoiding further strokes by controlling blood pressure and cholesterol levels. Greater improvements in walking and balance were seen in people who took part in programmes that included an educational element, compared to participants in programmes without this. The evidence was supported by the personal experiences of some committee members, who also emphasised the positive effect of interacting with other people who have had a stroke. They agreed this peer support helped people to know what to expect from their rehabilitation, share solutions to problems and engage more with therapy.

Overall, studies showed group circuit training, with or without an educational element, improved 6-minute walk test scores (a measure of how far the person can walk). People who took part in group circuit training with an educational element did not perform as well in the 6-minute walk test, but the committee noted that this result may be explained by a difference in baseline values between groups that included an educational element and groups that did not. Overall, some of the evidence suggested people could walk faster and found it easier to complete daily tasks after attending group circuit training. Adverse events were noted in groups taking part in training with an educational element, but the committee noted that the events were unlikely to be related to the circuit training itself.

Overall, the training was found to have potential benefits and there was no convincing evidence of it causing any harm. There was some inconsistency in results (which is probably because of the variation in programme content). Therefore, the committee agreed it could be considered as an option for some people if it included educational and peer support elements, rather than something offered to anyone able to walk with or without assistance after stroke.

How the recommendation might affect practice

There is variation in the availability of group circuit training across current practice, so additional resources (including staff training costs) may be needed to introduce it in some areas. The committee agreed that circuit training can be delivered by band 4 or 5 physiotherapists, as well as physiotherapy assistants, so would be unlikely to incur large additional costs. The educational requirement for this training may also impact on resources.

Return to recommendation

Mirror therapy for the upper or lower limb

Recommendations 1.13.30 and 1.13.31

Why the committee made the recommendations

The committee reviewed evidence from studies on mirror therapy that varied in setting, the time period after stroke and the participants' affected limbs. In some cases, mirror therapy was also combined with other therapies. Despite these differences, the studies showed mirror therapy led to improved outcomes for people after stroke, especially in their activities of daily living, and this was still the case after their 6-month follow-up. The committee agreed these outcomes should be the main focus of this type of treatment. They also recommended that mirror therapy could be used for the upper and lower limb as an adjunct to the person's existing rehabilitation programme because this was the approach taken in many of the studies.

The committee agreed mirror therapy should ideally begin within 1 month of stroke because the studies mainly included people in the acute or subacute period after stroke. However, a later start to the therapy may still be beneficial. The committee noted that, if offered, mirror therapy should be provided on a frequent basis, so people experience its full benefits. They suggested sessions of around 30 minutes, 5 days per week, for at least 4 weeks, as this was the average length and frequency reported in the studies.

The committee agreed that a member of the stroke rehabilitation team, for example a physiotherapist or occupational therapist, should supervise mirror therapy at first with a focus on explaining how it will work and what the person can expect from it. This was supported by a lay member on the committee who said they initially found mirror therapy 'somewhat alien and confusing' but, after further training from an occupational therapist, saw it as extremely beneficial. The committee agreed that some people, for example those with cognitive difficulty, may need more supervision but others can complete the therapy alone, either in hospital or once home (with a loaned mirror).

The committee were unable to specify which groups of people would benefit from this therapy the most as the studies involved varied populations. Therefore, they made a recommendation for research on groups that could benefit from mirror therapy after stroke.

How the recommendations might affect practice

Mirror therapy is a recognised therapy but is not used as standard throughout the NHS. It is often used at the discretion or preference of healthcare professionals as part of other therapy sessions. These recommendations would therefore require a change to current practice for some stroke units.

Additional resources may be required because healthcare professionals will need time to provide initial training and then to supervise the therapy for around 4 weeks for some people. However, most people are likely to be able to continue with mirror therapy unsupervised after initial training. There may be additional costs for stroke units if they need to purchase mirrors, especially if people can take them home. However, these will usually be returned and reused.

Return to recommendations

Music therapy and interventions

Why the committee made no recommendations

The evidence for music therapy and interventions showed they could have some benefit, but this was too limited to recommend their use. Published studies were limited and difficult to compare because of the:

- small number of participants
- lack of cost effectiveness data
- use of varied outcome measures, which differed between studies but all lacked patient- and carer-specific outcome measures
- prominent use of a no-treatment comparison (or usual care provided to both groups, with the intervention group receiving additional music therapy)
- diverse type of audio and music on offer.

Based on this, the committee made a recommendation for research on the clinical and cost effectiveness of music therapy for people after a first stroke or recurrent strokes. In particular, they highlighted the need for larger, pragmatic, randomised controlled trials that compare music therapy or interventions with another social activity as a control, and where both types of activity are provided for an equal amount of time. The committee also agreed there was a need for more research into whether music therapy and interventions are cost effective and improve patient-centred outcomes (such as participation in everyday and social activities).

Managing shoulder pain

Recommendations 1.14.2 and 1.14.4

Why the committee made the recommendations

The evidence on interventions for shoulder pain was limited because it did not explore the underlying causes of pain. Post-stroke shoulder pain can be caused by various factors (for example, glenohumeral joint subluxation, spasticity of shoulder muscles, impingement, soft tissue injury, rotator cuff tears, glenohumeral capsulitis or biceps tendonitis) and these can also change over time. The committee recommended that the cause of the person's shoulder pain should be identified wherever possible so they can get the right treatment. However, they also recognised this was often difficult to do in practice and so made recommendations for research to identify both the most useful tests to establish the causes of shoulder pain after stroke and how to manage shoulder pain depending on its cause.

None of the interventions used in the studies were found to have a large or consistent benefit. However, a small number of studies found some treatments to be beneficial. The use of taping, NMES, intra-articular corticosteroid injections and nerve blocks helped reduce pain and led to improvements in shoulder function. The committee therefore agreed to include these as potential treatment options.

How the recommendations might affect practice

All the recommended interventions for shoulder pain, except NMES, are widely used in the NHS. NMES is just 1 of several treatment options and is unlikely to be needed by many people. The recommendations are therefore unlikely to lead to a major change in practice.

Return to recommendations

Spasticity

Recommendations 1.15.1 to 1.15.8

Why the committee made the recommendations

The committee agreed it was important to differentiate between generalised and focal spasticity (which affects a particular limb or part of a limb) because focal spasticity is more likely to improve with treatment aimed at a specific area of the body. Most of the available evidence was on focal spasticity, particularly of the upper limb.

Spasticity can be difficult to treat, so it is important that people after stroke, and their families and carers, are given information on the condition. This will help ensure they know when to seek help but also to understand that spasticity is a difficult condition to manage. The multidisciplinary stroke rehabilitation team should also be involved in individual plans for managing focal and generalised spasticity. Based on their experience, the committee also highlighted some interventions that have been widely used for a long time, for example, stretches or advice on how to avoid triggers.

For focal spasticity, the committee looked at the evidence for different types of botulinum toxin A, including Dysport, Botox and Xeomin. Dysport and Xeomin were found to be both cost effective and beneficial in terms of both reducing spasticity in the upper limb and improving activities of daily living. However, Dysport and Xeomin were only cost effective if certain doses were given and if:

- the injections were spread across multiple points in the affected limbs and
- the treatment was only given every 3 months and
- treatment was based on the person's needs and discontinued if ineffective.

The cost effectiveness of Botox in upper limb was not evaluated in the health economic analysis carried out for this update because there was a lack of clinical evidence relating to Modified Ashworth Scale responder outcomes. The published economic evidence regarding the use of Botox in the upper limb was also limited. Therefore, the committee agreed there was not enough evidence to support its use for this indication.

Other preparations of botulinum toxin A are licensed for focal spasticity, including those that are referred to in SIGN's 2023 edition of the National clinical guideline for stroke for the UK and Ireland. If these preparations are already being used and are proving effective, then treatment with these can continue.

There was no cost effectiveness evidence and insufficient clinical evidence to recommend botulinum toxin A for spasticity of the lower limb. Only 1 published health economic analysis included a lower limb indication, but this only compared Botox and Dysport and therefore did not explore whether botulinum toxin A was cost effective compared to no treatment. Given the lack of high-quality economic evidence, the committee made a recommendation for research to compare the clinical and cost effectiveness of Botox, Dysport and Xeomin with each other and to usual care for focal spasticity, including in the lower limb.

The committee looked at 3 forms of electrical stimulation therapy for focal spasticity: functional electrical stimulation (FES), NMES and transcutaneous electrical stimulations (TENS). All were found to reduce spasticity and improve the ability to use the affected limb when compared to usual care. NMES and TENS also showed benefits in comparison to sham or placebo treatment. However, improvements seen in the studies were modest and the benefits of these treatments were only reported during time periods of less than 6 months. There was insufficient data to recommend 1 treatment over another. The 3 treatments are currently available in the NHS and TENS is widely used for many conditions, so the committee agreed they should only be potential treatment options. They also made a recommendation for research into the clinical and cost effectiveness of these 3 forms of electrotherapy compared to usual care.

There was limited evidence on treatments for generalised spasticity, and only 1 study examining oral medicines was identified. However, the committee noted that oral baclofen and tizanidine are often used to treat this condition. The use of oral baclofen is more common, while tizanidine is usually prescribed by specialists. Therefore, the committee recommended that oral baclofen could be an option for generalised spasticity but agreed its use needed to be closely monitored as it can sometimes be too effective in reducing muscle tone and can impair function more than the original spasticity. They did not recommend tizanidine because the evidence was limited, of low quality and did not report any clinically important benefits.

The committee were aware that some people may need other treatments (such as intrathecal baclofen) because they have complex needs, or spasticity that is difficult to manage. There was insufficient evidence to recommend these treatments, so the committee agreed by consensus that people should be referred to specialised units for further treatment.

Evidence showed acupuncture and electroacupuncture for treating spasticity improved some, but not many, outcomes. The committee also noted this treatment is not widely available. Therefore, they did not recommend its use but made a recommendation for research on its clinical and cost effectiveness.

How the recommendations might affect practice

Measures such as splinting, stretching and offering advice on how to avoid triggers are routinely used in current practice. Botulinum toxin A is widely used for focal spasticity but the recommendation for 2 forms, to be used at a certain dose and only for the upper limb, is likely to be cost saving. Electrical stimulation therapy is also widely available and, although most units do not have access to all 3 forms, this recommendation will have a minimal effect on practice. Oral baclofen is a low-cost medicine that is widely available in the NHS, so this recommendation should not alter practice. Multidisciplinary teams already discuss spasticity in their meetings and are aware of the potential need for specialist referral, so this recommendation will not change practice.

Return to recommendations

Returning to work

Recommendation 1.16.5

Why the committee made the recommendation

A single study from South Africa, whose participants took part in a focused return-to-work programme led by a physiotherapist and occupational therapist, found there were clinically important benefits to returning to work. Based on this evidence, which was reviewed for the section on community participation programmes, the committee agreed by consensus to recommend referral to return-to-work programmes, where available, for those wishing to resume work after stroke.

How the recommendation might affect practice

This recommendation may increase the demand for return-to-work programmes for people after stroke.

Return to the recommendation

Self-management interventions

Why the committee made no recommendations

The committee did not make any recommendations for self-management interventions, which focus on empowering the person after stroke to manage their own symptoms (for example through components like problem-solving, goal-setting, decision-making, selfmonitoring or using coping strategies). This is because they were not found to be more clinically effective than other interventions. The evidence was supported by the committee's own experiences of self-management interventions, although some committee members did report having positive personal experiences of using them. The committee therefore agreed self-management interventions could still play a useful role in supporting the health of people after stroke but further studies were needed into their benefits, as well as effective components and optimal frequency. They made a recommendation for research on the clinical and cost effectiveness of self-management interventions for people after stroke.

Community participation programmes

Recommendation 1.17.6

Why the committee made the recommendation

Community participation programmes can cover a wide range of interests and activities. The content of each programme and the degree to which healthcare professionals run or oversee them also varies. The evidence mainly looked at different types of group-based physical exercise, but some covered art or music activities. In general, people who took part in these programmes found their quality of life improved although, as expected, the benefits they experienced varied between the programmes used in the studies. Members of the committee also had positive experiences of taking part in these programmes and agreed they were of value to people after stroke. Therefore, the committee recommended that people could be referred to a community programme if there was 1 available which met their needs. They also agreed that family members and carers could find the programmes beneficial because they can help prevent feelings of social isolation, improve quality of life and reduce caregiver strain.

How the recommendation might affect practice

Current practice is inconsistent across the country, with some programmes commissioned by the NHS and delivered by charities, and others delivered purely by charities with funding from grants. Availability and programme type also varies. This recommendation may increase the demand for community participation programmes.

Return to the recommendation

Context

Stroke can have a devastating impact on the lives of people, their families and carers. Morbidity from stroke is the single largest cause of complex impairments and limitations on activity. Mood disturbance, cognitive difficulties, vision problems and fatigue are particular issues that exacerbate other problems and impede overall recovery.

Although stroke is one of the biggest causes of death in the UK, most people survive a first stroke. Thanks to improvements in stroke care and new, acute treatments, the overall survival rate from first stroke has improved over the past 10 years. This has led to increases in the number of people in the community who need comprehensive post-stroke care and rehabilitation.

The previous NICE guideline on stroke rehabilitation was first published in 2013. Since then, there have been changes in the way stroke services have developed and a number of studies looking into the benefits of stroke rehabilitation. Modern stroke care starts immediately after the onset of stroke symptoms. Most acute care is delivered within stroke units as part of organised stroke services. Post-acute care can be delivered in secondary or primary care, often by teams working across different NHS trusts or other organisations.

Within such services, specialist multidisciplinary teams of appropriately skilled professionals work together to deliver goal-directed rehabilitation with the aim of helping people to relearn any skills they may have lost, improve their quality of life and enable them to live as independently as possible.

Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic page on stroke and transient ischaemic attack.

For full details of the evidence and the guideline committee's discussions, see the evidence reviews. You can also find information about how the guideline was developed, including details of the committee.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting our guidelines into practice, see resources to help you put NICE guidance into practice.

Update information

October 2023: We have reviewed the evidence and made new recommendations on:

- telerehabilitation
- hearing
- fatigue
- mouth care
- robot-assisted arm training, mirror therapy for the upper or lower limb and group circuit training
- spasticity
- return-to-work programmes
- community participation programmes

These recommendations are marked **[2023]**.

We have also reviewed the evidence and made new or updated recommendations on:

- transfer of care from hospital to community, including early supported discharge
- intensity of stroke rehabilitation
- vision
- swallowing
- shoulder pain.

These recommendations are marked **[2023]**. We also removed a recommendation for research about the clinical and cost effectiveness of intensive rehabilitation because the evidence for this was reviewed for the 2023 version of the guideline.

We have updated some recommendations without an evidence review to bring them in line with current terminology and practice.

These recommendations are marked **[2013, amended 2023]**.

In some cases, minor changes have been made to the wording to bring the language and style up to date, without changing the meaning.

ISBN: 978-1-4731-5481-0