NICE National Institute for Health and Care Excellence

Appendix A: Summary of evidence from surveillance

2019 surveillance of Stroke rehabilitation in adults (2013) NICE guideline CG162

Summary of evidence from surveillance

Studies identified in searches are summarised from the information presented in their abstracts.

Feedback from topic experts who advised us on the approach to this surveillance review, was considered alongside the evidence to reach a final decision on the need to update each section of the guideline.

Notes on summarising the evidence

Systematic reviews and randomised controlled trials

Because of the very high volume of evidence identified by the searches, only Cochrane systematic reviews and randomised controlled trials (RCT) were included in the evidence summary. Additionally, RCTs were cross-checked with Cochrane reviews and any that had been included in a Cochrane review were excluded from the evidence summary to avoid duplicating data.

Outcomes

To simplify and increase readability of the evidence summaries, rather than use the full names of all outcome measures (e.g. Modified Ashworth Scale, Fugl-Meyer Assessment, Barthel Index), alternative wording was used to indicate the main impairments that these measures represent (e.g. spasticity, function, activities of daily living).

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

Surveillance decision

This section of the guideline should be updated.

Stroke units

2018 surveillance summary

A Cochrane review (1) of 28 RCTs (n=5,855) examined organised inpatient (stroke unit) care. Compared with general wards, stroke unit care showed significant reductions in death at final follow-up (median 1 year), death or institutionalised care, and death or dependency (21 RCTs, n=3,994). Outcomes were independent of patient age, sex, initial stroke severity or stroke type, and appeared to be better in stroke units based in a discrete ward (significance not stated in the abstract). Stroke unit care did not lead to longer hospital stays (significance not stated in the abstract).

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded that patients treated in stroke units are more likely to be alive, independent, and living at home 1 year after the stroke. This agrees with the guideline recommendation that people with disability after stroke should receive rehabilitation in a dedicated stroke inpatient unit.

New evidence is unlikely to change guideline recommendations.

Core multidisciplinary stroke team

2018 surveillance summary

No relevant evidence was identified.

Intelligence gathering

A topic expert suggested that orthoptics, pharmacy and dietetics should be part of the core multidisciplinary stroke team. It was noted that particular benefits of involving pharmacy may include help with: medicines adherence; medicines optimisation; polypharmacy; and swallowing difficulties making it difficult to take 'usual' formulations of medicines.

The National Clinical Guideline for Stroke (2016) Royal College of Physicians Intercollegiate Stroke Working Party

includes the above 3 specialisms in its recommended multidisciplinary team for a stroke rehabilitation unit.

Impact statement

A topic expert suggested that orthoptics, pharmacy and dietetics should be part of the core multidisciplinary stroke team, which agrees with recommendations from the Royal College of Physicians Intercollegiate Stroke Working Party.

Although the recommendation on multidisciplinary stroke teams in NICE guideline CG162 does not include orthoptics, pharmacy and dietetics, it does include these aspects of care in a list of 'access to other services that may be needed'. As no new evidence was found of effectiveness of the specific makeup of the multidisciplinary team recommended by the Royal College of Physicians Intercollegiate Stroke Working Party, there is unlikely to be an impact the guideline at this time.

New evidence is unlikely to change guideline recommendations.

Carer training and support

2018 surveillance summary

Two RCTs (2) (n=930 patient and carer dyads) (3) (n=128 patient and carer dyads) examined carer training: a structured, competency-based training programme, and a psychoeducational programme, respectively. Compared to usual care, the first programme had no effect and the second showed some significant benefits such as caregiving competence and burden but had no effect on enabling stroke survivors to remain in their home.

An RCT (4) (n=106) found that rhythm-and-music-based therapy or horse-riding therapy for carers in the late phase after stroke (i.e. stroke occurred 10 months to 5 years before trial enrolment) significantly improved life situation of carers versus control at 3 months but not at 6 months.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The mixed results from the new evidence on specific carer training programmes are unlikely to impact the current guideline recommendation wording to offer training to family members or carers who are willing and able to be involved in supporting the person after their stroke.

The guideline makes no recommendations on specific therapy for carers, and the single trial of music-based and horse-riding therapy broadly supports the recommendation to consider the impact of the stroke on the person's family, friends and/or carers and, if appropriate, identify sources of support. Further evidence from more trials is needed before specific

therapies could be considered for inclusion in the guideline.

New evidence is unlikely to change guideline recommendations.

Early supported discharge

2018 surveillance summary

A Cochrane review (5) of 17 RCTs (n=2,422) examined early supported discharge (ESD) versus conventional care for people following an acute stroke. With ESD, the primary outcome of death or dependency at the end of follow-up was significantly reduced. ESD significantly reduced length of hospital stay by approximately 6 days. ESD also led to significant improvements in extended activities of daily living scores and satisfaction with services, but made no difference to: activities of daily living scores; patients subjective health status or mood; subjective health status, mood or satisfaction with services of carers; or readmission to hospital. Estimated costs from 6 trials ranged from 23% lower to 15% greater for ESD versus usual care. The greatest reductions in death or dependency were seen with a co-ordinated ESD team.

A second Cochrane review (6) of 32 RCTs (n=4,746), examined 'early discharge hospital at home' (i.e. active treatment in the patient's home for a condition that would otherwise need acute inpatient hospital care) compared with inpatient hospital care. In the studies of people recovering from stroke, early discharge made no significant difference to mortality at 3 to 6 months (11 trials, n=1114, moderate-certainty evidence), or to risk of hospital readmission (5 trials, n=345, low-certainty evidence). It significantly lowered the risk of living in an institutional setting at 6 months (4 trials, n=574, low-certainty evidence) and might have improved patient satisfaction (significance not reported in the abstract; n=795, low-certainty evidence). People assigned to hospital at home were discharged from the intervention significantly earlier, by about 7 days, than people receiving inpatient care (4 trials, n=528, moderate-certainty evidence). It was uncertain whether hospital at home has an effect on cost (very low-certainty evidence).

Six reports (7–12) from 5 RCTs (n=60; n=108; n=84; n=265; n=71) found that overall, home-based interventions early after stroke had significant benefits on e.g. activities of daily living, quality of life, walking, mortality and disability, and a cost-effectiveness study (13) (n=65) based on an RCT, found pre-discharge occupational therapy home visits after stroke were cost-effective.

Intelligence gathering

A topic expert noted the importance of ESD (i.e. functional rehabilitation in a person's home, inpatient rehabilitation and ongoing longer term needs).

Impact statement

One Cochrane review (specifically in stroke patients) concluded that ESD services with co-ordinated multidisciplinary team input provided for a selected group of stroke patients can reduce long-term dependency and admission to institutional care as well as reducing the length of hospital stay.

A further Cochrane (in which a subgroup of stroke studies were analysed) did not find benefits for mortality or risk of hospital readmission, it did find a reduced risk of living in an institutional setting and improved patient satisfaction.

Seven further studies found that there are benefits and cost savings of ESD.

The new evidence and topic expert comments are largely aligned with the guideline recommendation to offer ESD to people with stroke who are able to transfer from bed to chair independently or with assistance, as long as a safe and secure environment can be provided, and that ESD should be part of a skilled stroke rehabilitation service.

New evidence is unlikely to change guideline recommendations.

Third sector organisations

2018 surveillance summary

No relevant evidence was identified.

Intelligence gathering

A topic expert suggested including third sector organisations (such as the Stroke Association who provide essential pre-, peri- and post-discharge care) in the section of the guideline on 'Transfer of care from hospital to community'.

The National Clinical Guideline for Stroke (2016) Royal College of Physicians Intercollegiate Stroke Working Party recommends that before the transfer of care for a person with stroke from hospital to home (including a care home) occurs: the person and their family/carers should be given information and offered contact with relevant statutory and voluntary agencies.

Impact statement

A topic expert suggested including third sector organisations, which are mentioned in recommendations by the Royal College of Physicians Intercollegiate Stroke Working Party (though the recommendation was based on Working Party consensus, not formal evidence).

Currently these types of organisation are not included in the section of NICE guideline CG162 on 'Transfer of care from hospital to community'. However a later recommendation does state: 'Take into consideration the impact of the stroke on the person's family, friends and/or carers and, if appropriate, identify sources of support.'

No new evidence was found of effectiveness of offering patients contact with third sector organisations as recommended by the Royal College of Physicians Intercollegiate Stroke Working Party, and there is therefore unlikely to be an impact on NICE guideline CG162. But it is noted that rehabilitation in partnership with voluntary organisations, including the Stroke Association, is advocated within the NHS Long Term Plan (January 2019).

New evidence is unlikely to change guideline recommendations.

Medicines management

2018 surveillance summary

No relevant evidence was identified.

Intelligence gathering

The following issues were raised regarding medicines which may need consideration:

- Recommendations 1.1.17 and 1.11.7 state: 'Provide advice on prescribed medications for people after stroke in line with recommendations in Medicines adherence (NICE clinical guideline 76).'
  Adding a cross-referral to NICE guideline NG5 Medicines optimisation may also be needed here.
- Recommendation 1.10.2 states: 'People who have difficulties in activities of daily living after stroke should have regular monitoring and treatment…'
  It was questioned whether assessing for medicines adherence should also be mentioned here.
- NICE key therapeutic topic KTT18 Multimorbidity and polypharmacy, in the section on polypharmacy, states 'Problematic polypharmacy may arise if […] the overall demands of medicine-taking, or 'pill burden', are unacceptable to the person.'
  This may apply to people who have had a stroke and may need consideration by NICE guideline CG162.
- The National Clinical Guideline for Stroke (2016) Royal College of Physicians Intercollegiate Stroke Working Party makes more detailed recommendations about medicines than NICE guideline CG162, which may need consideration in the NICE guideline, for example:
  'People with stroke or TIA who are receiving medication for secondary prevention should:
  - receive information about the reason for the medication, how and when to take it and common side effects;
  - receive verbal and written information about their medicines in an appropriate format;
  - be offered compliance aids such as large-print labels, non-childproof tops and dosette boxes according to their level of manual dexterity, cognitive impairment, personal preference and compatibility with safety in the home;

- be aware of how to obtain further supplies of medication;
- have their medication regularly reviewed;
- have their capacity to take full responsibility for self-medication assessed (including cognition, manual dexterity and ability to swallow) by the multidisciplinary team as part of their rehabilitation prior to the transfer of their care out of hospital.'
- In a separate recommendation the Intercollegiate Stroke Working Party states 'Patients with swallowing difficulty after acute stroke should only be given food, fluids and medications in a form that can be swallowed without aspiration.'

Impact statement

Adding further cross-referrals to other NICE guidance on medicines issues, and adding any further information on medicines (such as is included in the Intercollegiate Stroke Working Party guideline) will be considered by the committee developing the updated guideline.

New evidence identified that may change guideline recommendations.

1.2 Planning and delivering stroke rehabilitation

Surveillance decision

This section of the guideline should be updated.

Screening and assessment

2018 surveillance summary

No relevant evidence was identified.

Intelligence gathering

A topic expert noted that in recommendation 1.2.1 which lists issues people should be screened for on admission to hospital, to ensure immediate safety and comfort, vision assessment should be added.

Impact statement

A topic expert noted that in recommendation 1.2.1 which lists issues people should be screened for on admission to hospital, to ensure immediate safety and comfort, vision assessment should be added. Vision assessment is currently covered by recommendation 1.2.2 which states: 'Perform a full medical assessment of the person with stroke, including cognition (attention, memory, spatial awareness, apraxia, perception),

vision, hearing, tone, strength, sensation and balance.'

Consideration of a refresh of recommendation 1.2.1, to potentially include vision in issues to be immediately screened for, will be undertaken by the committee developing the updated guideline to ensure any change in wording is clinically meaningful and appropriate.

New evidence is unlikely to change guideline recommendations.

Intensity of stroke rehabilitation

2018 surveillance summary

No relevant evidence was identified.

Intelligence gathering

A topic expert noted that recommendation 1.2.16 'Offer initially at least 45 minutes of each relevant stroke rehabilitation therapy for a minimum of 5 days per week' is now outdated, and it should be aligned with 7-day therapy as recommended by the National Clinical Guideline for Stroke (2016) Royal College of Physicians Intercollegiate Stroke Working Party.

Impact statement

Seven-day standards for all stroke units are advocated by the NHS Long Term Plan (January 2019).

A topic expert also stated that the recommendation in NICE guideline CG162 to offer rehabilitation therapy for a minimum of 5 days per week should be aligned with the recommendation from the Royal College of Physicians Intercollegiate Stroke Working Party for 7-day therapy.

New evidence identified that may change guideline recommendations.

Early rehabilitation

2018 surveillance summary

An RCT (14) (n=243) found that after early rehabilitation (within 48 hours of stroke), patients were significantly less likely to have died, and there were significant improvements in morbidity, physical and mental health and activities of daily living. But a second RCT (15) (n=104) found that intensive physical therapy within 72 hours of a first stroke did not improve motor function.

Intelligence gathering

A topic expert noted the importance of hyperacute/acute stroke rehabilitation on a hyperacute stroke unit.

Impact statement

Although a topic expert noted the importance of early rehabilitation, mixed results with the new evidence from 2 heterogeneous trials are unlikely to affect the guideline which does not currently specify a timepoint after stroke within which to commence rehabilitation.

It should be noted that recommendations on early mobilisation are made in NICE guideline CG68 Stroke and transient ischaemic attack in over 16s: diagnosis and initial management. The recommendations in this area have recently been updated and consulted on (publication is expected May 2019). The wording of the relevant draft recommendations in NICE guideline CG68 (which may be subject to further change post-consultation) currently state:

1.7.2 Help people with acute stroke to sit out of bed, stand or walk when their clinical condition permits as part of an active management programme in a specialist stroke unit. [2019]

1.7.3 Do not offer high-intensity mobilisation in the first 24 hours after symptom onset in people with acute stroke. [2019]

New evidence is unlikely to change guideline recommendations.

Individualised rehabilitation

2018 surveillance summary

No relevant evidence was identified.

Intelligence gathering

A topic expert noted that the concept of a more individualised 'rehabilitation prescription' needs to be explored as a framework.

The National Clinical Guideline for Stroke (2016) Royal College of Physicians Intercollegiate Stroke Working Party recommends that exercise prescription should be individualised, and reflect treatment goals and activity recommendations.

Impact statement

A topic expert noted that more individualised rehabilitation needs to be explored.

NICE guideline CG162 currently includes a section on setting goals for rehabilitation which allows for personalised rehabilitation planning, and recommends that documentation about the person's stroke rehabilitation should be individualised (which should include,

among other things, the person's rehabilitation goals). The expert comments are therefore unlikely to affect the guideline.

New evidence is unlikely to change guideline recommendations.

1.3 Providing support and information

Surveillance decision

This section of the guideline should not be updated.

Providing information for stroke patients and carers

2018 surveillance summary

A Cochrane review (16) of 21 RCTs (n=2,289 patients and 1,290 carers) examined information provision for stroke patients and their caregivers. Primary outcomes were knowledge about stroke and stroke services, and impact on mood. Nine trials evaluated a passive and 12 trials an active information intervention. Meta-analyses showed a significant effect in favour of the intervention on patient knowledge, carer knowledge, one aspect of patient satisfaction (unspecified in the abstract), and patient depression scores. There was no effect on number of cases of anxiety or depression in patients, carer mood or satisfaction, or death. Qualitative analyses found no strong evidence of an effect on other outcomes. Post-hoc subgroup analyses showed that active information had a significantly greater effect than passive information on patient mood but not on other outcomes.

An RCT (17) (n=138 patients and carers) found that a computer-generated, tailored written information booklet and verbal reinforcement provided prior to, and for 3 months following, discharge led to significantly better self-efficacy for accessing stroke information, feeling more informed, and improved satisfaction with information about medical and practical issues, services and benefits, and secondary prevention. There was no significant effect on stroke knowledge, anxiety and depression, caregiver burden or patient quality of life.

Intelligence gathering

A topic expert highlighted the area of predictive modelling in terms of predictive tools around outcome so as to give better information to patients and carers about eventual outcome. However no evidence in this area fulfilling the criteria of the current surveillance review was found.

A topic expert also stated that more emphasis was needed on other sources of information (e.g. Stroke Association, such as My Stroke Guide).

Impact statement

The Cochrane authors concluded information improves patient and carer knowledge of stroke, aspects of patient satisfaction, and reduces patient depression scores. The individual RCT broadly agreed with it.

The new evidence agrees with the guideline recommendation to identify information needs and how to deliver them, and to provide information that can help to support needs and priorities.

Concerns raised by the topic expert about links with third sector organisations are addressed in the NHS Long Term Plan (January 2019), which promotes partnership with voluntary organisations, including the Stroke Association. Additionally, the NICE guideline does not preclude any sources of information.

New evidence is unlikely to change guideline recommendations.

1.4 Cognitive functioning

Surveillance decision

This section of the guideline should not be updated.

Cognitive rehabilitation for executive dysfunction

2018 surveillance summary

A Cochrane review (18) of 19 RCTs (n=907) examined cognitive rehabilitation for executive dysfunction in adults with stroke or other adult non-progressive acquired brain damage. The primary outcome was global executive function and the secondary outcomes were specific components of executive function, working memory, activities of daily living, extended activities of daily living, quality of life and participation in vocational activities. Thirteen studies (n=770) were meta-analysed (417 participants with traumatic brain injury, 304 with stroke, 49 with other acquired brain injury). Data could not be obtained from 6 studies. Three studies (n=134) compared cognitive rehabilitation with sensorimotor therapy. None reported the primary outcome of global executive function, and 1 study reported secondary outcomes including concept formation and activities of daily living (no details of effect reported in the abstract). Six studies (n=333) compared cognitive rehabilitation with no treatment or placebo. None reported the primary outcome, and data from 4 studies showed

no significant effect of cognitive rehabilitation on secondary outcomes. Ten studies (n=448) compared 2 different cognitive rehabilitation approaches. Two studies (n=82) found a significant effect on the primary outcome, and data from 8 studies showed no significant effect on the secondary outcomes. The effect of restorative interventions (aimed at improving cognition including separable executive function data) and compensative interventions (aimed at training participants in methods to compensate for lost executive function) was explored, but no significant effect compared with other interventions was found.

Six RCTs (19–24) (n=200, n=101, n=110, n=168, n=80, n=225) examined a variety of interventions on: cognitive training plus rehabilitation training plus patient education; lifestyle-based multidomain intervention; computer-based game training; visual training; and physical exercise plus cognitive training. Only 1 study (on visual training) specifically examined and found significant benefits for outcomes specific to executive function i.e. attention and concentration, executive function, abstract thinking, and calculation. Most of the others demonstrated significant benefits across more secondary outcomes including activities of daily living, working memory, self-efficacy, and cognitive impairment.

Intelligence gathering

A topic expert noted that executive functioning was not addressed by the guideline.

Impact statement

The Cochrane authors concluded that there was insufficient high-quality evidence to reach any generalised conclusions about the effect of cognitive rehabilitation on executive function, or other secondary outcome measures, and further high-quality research is needed.

The other 6 studies provided evidence of benefit but the interventions were heterogeneous and most did not examine outcomes specific to executive function.

The new evidence is unlikely to affect the guideline which does not make specific recommendations on executive function, but does state that where a cognitive deficit is identified, carry out a detailed assessment using valid, reliable and responsive tools before designing a treatment programme.

New evidence is unlikely to change guideline recommendations.

Cognitive rehabilitation for spatial neglect

2018 surveillance summary

A Cochrane review (25) of 23 RCTs (n=628) examined cognitive rehabilitation for spatial neglect following stroke. Meta-analyses found no significant effect of cognitive rehabilitation, compared with control, for persisting effects on either activities of daily living (5 studies, n=143) or standardised neglect assessments (8 studies, n=172), or for immediate effects on activities of daily living (10 studies, n=343). In contrast, a significant effect was found for cognitive rehabilitation compared with control, for immediate effects on standardised neglect assessments (16 studies, n=437 participants). However, sensitivity analyses including only studies of high methodological quality removed evidence of a significant effect of cognitive rehabilitation.

Two RCTs (26,27) (n=70, n=64) found no benefits of prism adaptation or kinaesthetic ability training respectively.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded that no rehabilitation approach can be supported or refuted (though there is very limited evidence that cognitive rehabilitation may have an immediate beneficial effect on tests of neglect) and further trials are needed.

The additional 2 heterogeneous trials which found no evidence of benefit are unlikely to affect the Cochrane conclusion. One of the trials found no benefits of prism adaptation, which is recommended by the guideline, but as a single trial it is currently unlikely to impact the guideline.

Overall the new evidence is unlikely to affect the guideline recommendation to use interventions for visual neglect after stroke that focus on the relevant functional tasks, taking into account the underlying impairment.

New evidence is unlikely to change guideline recommendations.

Cognitive rehabilitation for memory dysfunction

2018 surveillance summary

A Cochrane review (28) of 13 RCTs (n=514) examined cognitive rehabilitation for memory deficits after stroke. There were significant small to moderate benefits of treatment on subjective reports of memory in the short term (moderate quality of evidence), but not the long term (low quality of evidence). The results did not show any significant effect of memory rehabilitation on performance in objective memory tests, mood, functional abilities, or

quality of life. No information was available on adverse events.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded that cognitive rehabilitation for memory problems had benefits in the short term but not in the longer term, and evidence to support or refute memory rehabilitation was limited. They stated more trials were needed.

The evidence is unlikely to affect the guideline recommendation to use interventions for memory and cognitive functions after stroke that focus on the relevant functional tasks.

New evidence is unlikely to change guideline recommendations.

Cognitive rehabilitation for attention dysfunction

2018 surveillance summary

A Cochrane review (29) of 6 RCTs (n=223) examined cognitive rehabilitation for attention deficits following stroke. The primary outcome was measures of global attentional functions, and secondary outcomes were measures of attention domains, functional abilities, mood and quality of life. All 6 RCTs compared cognitive rehabilitation with usual care. Meta-analyses showed no significant effect of cognitive rehabilitation for persisting effects on global measures of attention (2 studies, n=99), standardised attention assessments (2 studies, n=99), or functional outcomes (2 studies, n=99). In contrast, a significant effect was found with cognitive rehabilitation for immediate effects on measures of divided attention (4 studies, n=165) but no significant effects on global attention (2 studies, n=53), other attentional domains (6 studies, n=223 participants) or functional outcomes (3 studies, n=109).

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded that there was limited evidence that cognitive rehabilitation may improve attention in the short term, but insufficient evidence to support or refute persisting effects (for which more trials are needed), and effectiveness of cognitive rehabilitation for attention remains unconfirmed.

The evidence is unlikely to affect the guideline which recommends considering attention training for people with attention deficits after stroke.

New evidence is unlikely to change guideline recommendations.

1.5 Emotional functioning

Surveillance decision

This section of the guideline should be updated.

Psychological intervention

2018 surveillance summary

Three RCTs found psychological interventions (30–32) (n=128, n=120, n=166) significantly improved various outcomes including activities of daily living, depression, anxiety, and task-oriented and avoidant coping.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The new evidence agrees with the current guideline recommendation to assess emotional functioning in the context of cognitive difficulties in people after stroke, and that any intervention chosen should take into consideration the type or complexity of the person's neuropsychological presentation and relevant personal history.

New evidence is unlikely to change guideline recommendations.

Sex, relationships and emotions

2018 surveillance summary

A systematic review (33) of 70 research reports (22 qualitative and 48 quantitative) reporting on 4,816 stroke survivors examined the impact of stroke on social support and social networks. It found that following a stroke, non-kin contact is vulnerable, strain is observed within the family unit, and poor social support is associated with depressive symptoms.

Intelligence gathering

A topic expert noted that issues with sex and relationships are not covered by the guideline, and that the only emotional functioning specifically mentioned is depression and anxiety.

The National Clinical Guideline for Stroke (2016) Royal College of Physicians Intercollegiate Stroke Working Party includes recommendations on a wider array of issues including psychological distress, emotionalism (an increase in

emotional behaviour such as crying or, less commonly, laughing following minimal provoking stimuli), and sex.

Impact statement

A systematic review found a stroke can negatively affect non-kin contact, the family unit, and social support (which is associated with depressive symptoms).

A topic expert also noted that there is no discussion in the guideline of sex, relationships or emotional issues other than depression and anxiety. The Royal College of Physicians Intercollegiate Stroke Working Party includes recommendations on a wider array of issues including psychological distress, emotionalism and sex. The new evidence and information could indicate a need to cover these areas in NICE guideline CG162.

New evidence identified that may change guideline recommendations.

1.6 Vision

Surveillance decision

This section of the guideline should be updated.

Vision assessment

2018 surveillance summary

No relevant evidence was identified.

Intelligence gathering

A topic expert stated that it is not just people with double vision who should be referred for formal orthoptic assessment, and that there are a variety of post-stroke visual impairments that require specialist assessment. The expert noted that there are discrepancies in this area between NICE guideline CG162 and the National Clinical Guideline for Stroke (2016) Royal College of Physicians Intercollegiate Stroke Working Party.

Impact statement

A topic expert stated that there are a variety of post-stroke visual impairments that require specialist assessment. The expert noted discrepancies in this area between the guideline from the Royal College of Physicians Intercollegiate Stroke Working Party (which states that people with altered vision, visual field defects [e.g. hemianopia] or eye movement disorders [e.g. strabismus and

motility deficit] should receive information, support and advice from an orthoptist and/or an ophthalmologist), whereas NICE guideline CG162 only states that people with persisting double vision should be referred for formal orthoptic assessment.

The Intercollegiate Stroke Working Party recommendations were based on Working Party consensus, not formal evidence. The NICE recommendation was based on a Delphi consensus process (namely an anonymous, consensus-building technique which uses information such as expert opinion rather than more formal evidence such as clinical trials).

Although no new evidence was found of which visual impairments require specialist assessment, the difference in opinion of the NICE guideline committee and Intercollegiate Stroke Working Party in this area warrants investigation and may potentially impact the guideline.

New evidence identified that may change guideline recommendations.

1.7 Swallowing

Surveillance decision

This section of the guideline should not be updated.

Nutritional support

2018 surveillance summary

A Cochrane review (34) of 33 RCTs (n=6,779) examined interventions for dysphagia and nutritional support in acute and subacute stroke. Evidence on swallowing therapy has been updated in a new and separate Cochrane review (35) [summarised below]. The evidence on nutritional support is relevant to other NICE guidelines than CG162; namely Nutrition support in adults (NICE guideline CG32) and Stroke (NICE guideline CG68).

Intelligence gathering

No additional information was identified for this section.

Impact statement

NICE guideline CG162 states provide nutrition support to people with dysphagia in line with recommendations in Nutrition support in adults (NICE guideline CG32) and Stroke (NICE guideline CG68), therefore there is no impact of the new evidence on nutrition support on CG162.

New evidence is unlikely to change guideline recommendations.

Swallowing therapy for dysphagia

2018 surveillance summary

A Cochrane review (35) of 41 RCTs (n=2,660) updated an older Cochrane review (34), but the focus of the new review was limited to swallowing therapy for dysphagia in acute and subacute stroke (nutritional, feeding, and fluid support were removed from this review and will become the focus of a separate review). Efficacy of swallowing therapy was assessed overall and in subgroups by type of intervention: acupuncture (11 studies), transcranial magnetic stimulation (9 studies), behavioural interventions (9 studies), drug therapy (3 studies), neuromuscular electrical stimulation (6 studies), pharyngeal electrical stimulation (4 studies), physical stimulation (3 studies), and transcranial direct current stimulation (2 studies). Swallowing therapy had no effect on death or dependency/disability (2 studies, n=306; moderate-quality evidence), or on case fatality at the end of the trial (14 studies, n=766). Swallowing therapy significantly reduced length of inpatient stay (8 studies; n=577; moderate-quality evidence) and the proportion of participants with dysphagia at the end of the trial (23 studies, n=1487; low-quality evidence). Swallowing therapy significantly improved swallowing ability (26 studies, n=1173; very low-quality evidence). Swallowing therapy did not reduce the penetration aspiration score (i.e. it did not reduce radiological aspiration; 11 studies, n=303; low-quality evidence). Swallowing therapy significantly reduced the incidence of chest infection or pneumonia (9 studies, n=618 participants; very low-quality evidence). There was no evidence of a subgroup effect for any outcomes.

Two RCTs (36,37) (n=135, n=60) found neuromuscular electrical stimulation significantly improved swallowing and aspiration. An RCT (38) (n=60) found early swallowing therapy significantly improved recovery and reduced frequency of pneumonia, and an RCT (39) (n=90) found Shaker exercise (sustained and repetitive head lifting exercises to enhance muscular strength) and chin tuck against resistance exercise significantly improved dysphagia.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded that moderate- and low-quality evidence suggests that swallowing therapy did not have a significant effect on the outcomes of death or dependency/disability, case fatality at the end of the trial, or penetration aspiration score. However, swallowing therapy may have reduced length of hospital stay, dysphagia, and chest infections, and may have improved swallowing ability. However, these results are based on evidence of variable quality, involving a variety of interventions. The Cochrane review stated that further high-quality trials are needed.

Two RCTs found benefits of neuromuscular electrical stimulation. This evidence is covered by NICE interventional procedures guidance IPG634 Transcutaneous neuromuscular

electrical stimulation for oropharyngeal dysphagia in adults, which states: 'For adults with dysphagia after a stroke, the evidence on efficacy suggests a potential benefit, but is limited in quality and quantity. Therefore, this procedure should only be used with special arrangements for clinical governance, consent, and audit or research.'

The other 2 individual trials were of heterogeneous interventions and do not add much information to the Cochrane conclusion.

The new evidence is aligned with the guideline recommendation to offer swallowing therapy to people with dysphagia after stroke who are able to participate, for as long as they continue to make functional gains. Swallowing therapy could include compensatory strategies, exercises and postural advice.

New evidence is unlikely to change guideline recommendations.

Mouth care

2018 surveillance summary

Three RCTs (40–42) (n=94, n=102, n=62) found that oral hygiene care programmes (e.g. a powered toothbrush, chlorhexidine mouthrinse, oral hygiene instruction, tooth brushing education, professional tooth cleaning) led to significantly better oral health-related quality of life and health-related quality of life, and significantly reduced plaque and improved oral hygiene status.

Intelligence gathering

A topic expert noted that there is limited detail on oral care in the guideline.

Impact statement

NICE guideline CG162 recommends ensuring that effective mouth care is given to people with difficulty swallowing after stroke, in order to decrease the risk of aspiration pneumonia, but details of mouth care are not specified.

The new evidence, although broadly aligned with the guideline recommendation to give effective mouth care, suggests that more detail could be added to NICE guideline CG162 in this area.

New evidence identified that may change guideline recommendations.

1.8 Communication

Surveillance decision

This section of the guideline should be updated.

Speech and language therapy for aphasia

2018 surveillance summary

A Cochrane review (43) of 57 RCTs (74 randomised comparisons, n=3,002; some participants appearing in more than 1 comparison) examined speech and language therapy (SLT) for aphasia following stroke. Compared with no SLT, SLT resulted in clinically and statistically significant benefits to patients' functional communication, reading, writing, and expressive language (27 randomised comparisons, n=1,620). But (based on smaller numbers) benefits were not evident at follow-up 3–6 months after the intervention period. Meta-analyses found no evidence of a difference in functional communication with SLT versus social support and stimulation, but more participants withdrew from social support interventions than SLT (9 randomised comparisons, n=447). Functional communication was significantly better in people with aphasia that received therapy at a high intensity, high dose, or over a long duration compared to those that received therapy at a lower intensity, lower dose, or over a shorter period of time (38 randomised comparisons, n=1,242 participants). The benefits of a high intensity or a high dose of SLT were confounded by a significantly higher dropout rate in these intervention groups. Generally, trials randomised small numbers of participants across a range of characteristics (age, time since stroke, and severity profiles), interventions, and outcomes.

Two RCTs (44,45) (n=158, n=118) examining intensive speech and language therapy found it significantly improved verbal communication effectiveness in everyday life scenarios and aphasia. An NIHR signal has been published on one of the RCTs (44). An RCT (46) (n=152) of intensive cognitive-linguistic treatment found it did not improve everyday verbal communication.

Intelligence gathering

A topic expert noted that there may be evidence for therapy apps for more self-directed rehabilitation e.g. speech therapy apps. However no evidence in this area fulfilling the criteria of the current surveillance review was found.

Additional feedback from topic experts indicated that there is the potential to benefit from speech and language therapy several years after a stroke

Impact statement

The Cochrane authors concluded there is evidence of the effectiveness of SLT for

people with aphasia following stroke in terms of improved functional communication, reading, writing, and expressive language compared with no therapy. There is some indication that therapy at high intensity, high dose or over a longer period may be beneficial.

Two of 3 additional RCTs on intensive SLT agreed with the Cochrane review that therapy at high intensity may be beneficial. An NIHR signal about 1 of the RCTs that showed benefit of intensive SLT noted that the stroke had occurred between 1 and 6 years previously, suggesting that SLT may still be beneficial for people with aphasia several years after their stroke.

The new evidence may impact the guideline which currently makes no recommendations on the intensity of SLT, nor makes any mention of the continuing potential benefits of SLT several years after a stroke.

However, the Cochrane review found that benefits of high intensity or high dose SLT were confounded by a significantly higher dropout rate in these intervention groups, which may need consideration as this could suggest variation in acceptability of high intensity and high dose therapy between patients.

New evidence identified that may change guideline recommendations.

Dysarthria

2018 surveillance summary

A Cochrane review (47) of 5 RCTs (n=234) examined interventions for dysarthria due to stroke and other adult-acquired, non-progressive brain injury. Two studies used an attention control and 3 studies compared to usual care. Four studies included only people with stroke; 1 included mostly people with stroke, but also those with brain injury. Three studies delivered interventions in the first few months after stroke; 2 recruited people with chronic dysarthria. Three studies evaluated behavioural interventions, 1 investigated acupuncture and another transcranial magnetic stimulation. One study included people with dysarthria within a broader trial of people with impaired communication. The primary analysis of a persisting (3–9 months post-intervention) effect at the activity level of measurement found no evidence in favour of a dysarthria intervention compared with any control (3 trials, n=116 participants; low-quality evidence). Subgroup analysis results for stroke were similar to the primary analysis. There was no evidence of a persisting effect at the impairment (2 trials, n=56; very low quality evidence) or participation level (2 trials, n=79; low quality evidence). Analyses of immediate post-intervention outcomes provided no evidence of any short-term benefit on activity (3 trials, n=117; very low quality evidence) or participation (1 study, n=32) levels of measurement. There was a significant effect favouring intervention at the immediate, impairment level of

measurement (4 trials, n=99; very low quality evidence).

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded there were no definitive, adequately powered RCTs of interventions for people with dysarthria, but there is limited evidence to suggest there may be an immediate beneficial effect on impairment level measures; more, higher quality research is needed to confirm this finding.

The new evidence broadly agrees with the current guideline recommendation that speech and language therapists should provide direct impairment-based therapy for communication impairments (for example, aphasia or dysarthria).

New evidence is unlikely to change guideline recommendations.

1.9 Movement

Surveillance decision

This section of the guideline should be updated.

Editorial amendments

Recommendation 1.9.22 cross-refers to NICE guideline CG96 Neuropathic pain in adults which has now been replaced by NICE guideline CG173 Neuropathic pain in adults. The cross-referral will be updated.

Recommendation 1.9.31 cross-refers to NICE guideline IPG278 Functional electrical stimulation for drop foot of central neurological origin. The current link is broken and will be fixed.

Physiotherapy

2018 surveillance summary

A Cochrane review (48) of 96 RCTs (n=10,401) examined physical rehabilitation approaches for the recovery of function and mobility following stroke. More than half of the studies (50/96) were carried out in China. Generally the studies were heterogeneous, and many were poorly reported. Physical rehabilitation had a significantly beneficial effect, compared with no treatment, on functional recovery after stroke from Independence in activities of daily living scales (27 studies, n=3,423), and this effect persisted beyond the length of the intervention period

(9 studies, n=540 participants). Subgroup analysis revealed a significant difference based on dose of intervention (for independence in activities of daily living), indicating that a dose of 30 to 60 minutes per day delivered 5 to 7 days per week is effective. This evidence principally came from studies in China. Subgroup analyses also found significant benefit associated with a shorter time since stroke (for independence in activities of daily living). Physical rehabilitation was significantly more effective than usual care or attention control in improving motor function (12 studies, n=887), balance (5 studies, n=246 participants) and gait velocity (14 studies, n=1126). Subgroup analysis demonstrated a significant difference based on dose of intervention (for motor function), indicating that a dose of 30 to 60 minutes delivered 5 to 7 days a week provided significant benefit. Subgroup analyses also found significant benefit of a shorter time since stroke (for independence in activities of daily living). No one physical rehabilitation approach was more (or less) effective than any other approach in improving independence in activities of daily living (8 studies, n=491) or motor function (9 studies, n=546). Subgroup analyses for comparisons of intervention versus no treatment or usual care identified no significant effects of different treatment components or categories of interventions.

Eight RCTs examined various types of physiotherapy. Significant benefits for outcomes such as balance, gait and walking were seen with: balance training (49) (n=50), plinth and Swiss ball-based trunk exercise (50) (n=108), wearing the 'Regent Suit' (an elastic element-based suit) while doing neuromotor exercises (51) (n=60), core stability exercises (52) (n=79), and progressive resistance and balance exercises plus motivational group discussions (53) (n=67). No benefits were seen versus comparators with external focus instructions given during balance training (54) (n=63), video-guided at-home rehabilitation (55) (n=90), or a client-centred rehabilitation session in their home (tune-up) delivered 6 and 12 months after inpatient discharge (56) (n=103).

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded that physical rehabilitation, comprising a selection of components from different approaches, is effective for recovery of function and mobility after stroke. Evidence related to dose of physical therapy is limited by substantial heterogeneity and does not support robust conclusions. No one approach to physical rehabilitation was deemed more (or less) effective in promoting recovery of function and mobility after stroke.

The individual RCTs showed benefits of particular types of physiotherapy but due to heterogeneity of the interventions no single approach stood out as beneficial, in agreement with the Cochrane conclusion.

The new evidence is unlikely to affect the guideline recommendation to provide physiotherapy for people who have weakness in their trunk or upper or lower limb, sensory disturbance or balance

difficulties after stroke that have an effect on function.

New evidence is unlikely to change guideline recommendations.

Strength training

2018 surveillance summary

Sit-to-stand interventions

A Cochrane review (57) of 13 RCTs (n=603) examined interventions for improving sit-to-stand ability following stroke. Twelve studies investigated rehabilitation interventions and 1 (n=9) investigated altered starting posture for sit-to-stand. Most trials included participants who were already able to sit-to-stand or walk independently. Training increased the odds of achieving independent sit-to-stand compared with control (1 study, n=48; very low quality evidence). Interventions or training for sit-to-stand improved the time taken to sit-to-stand (7 studies, n=335; moderate quality evidence) and the lateral symmetry (weight distribution between the legs) during sit-to-stand (5 studies, n=105; moderate quality evidence). These improvements were maintained at long-term follow-up. Few trials were identified assessing the effect of sit-to-stand training on peak vertical ground reaction force (1 study, n=54; very low quality evidence) and functional ability (2 studies, n=196; low quality evidence). No significant effect of sit-to-stand training was found for number of falls (5 studies, n=319; low quality evidence).

An RCT (58) (n=50) found that modified sit-to-stand training (in which the paretic foot is placed posterior) significantly improved rise time and balance, but another RCT (59) (n=61) found that wearing a physical activity monitor during sit-to-stand training made no difference to mobility or sit-to-stand performance.

Functional strength training for upper limb

An RCT (60) (n=288) found no difference in arm function or adverse events between functional strength training or movement performance therapy.

Functional strength training for lower limb

An RCT (61) (n=63) found 8 weeks isokinetic strength training (variable resistance applied to a limb in constant motion) had significant benefits for balance, motor function, walking, and activities of daily living versus isokinetic strength training for 4 weeks followed by general strength training, and versus normal resistance training for 4 weeks followed by isokinetic strength training.

Intelligence gathering

No additional information was identified for this section.

Impact statement

Sit-to-stand interventions

The Cochrane authors concluded there was insufficient evidence to reach conclusions about impact on ability to sit-to-stand independently, functional ability or falls, but there may be benefits for time taken to sit-to-stand and lateral symmetry during sit-to-stand.

Two heterogeneous RCTs (one of a specific variant of sit-stand exercise, and the other of using activity monitors) had mixed results which do not add much to the Cochrane findings, and overall the new evidence is unlikely to affect the guideline recommendation to consider strength training for people with muscle weakness after stroke, which could include sit-to-stand repetitions.

New evidence is unlikely to change guideline recommendations.

Functional strength training for upper limb

A single RCT which found no difference between functional strength training or movement performance therapy on arm function is unlikely to affect the guideline recommendation to consider strength training for people with muscle weakness after stroke.

New evidence is unlikely to change guideline recommendations.

Functional strength training for lower limb

Although an RCT found benefits of isokinetic strength training, as a single trial it is unlikely to affect the guideline which does not specifically recommend isokinetic training, but does recommend considering strength training which could include progressive resistance exercise.

New evidence is unlikely to change guideline recommendations.

Fitness training

2018 surveillance summary

Physical fitness training

A Cochrane review (62) of 58 RCTs (n=2,797) examined physical fitness training for stroke patients. Global indices of disability showed significant improvement after cardiorespiratory training and mixed training; benefits at follow-up (i.e. after training had stopped) were unclear. Cardiorespiratory training involving walking significantly improved maximum walking speed, preferred gait speed, and distance walked in 6 minutes at the end of the intervention. Mixed training, involving walking, increased preferred walking speed, and distance walked in 6 minutes. Balance scores significantly improved after mixed training. Some mobility benefits also persisted at the end of follow-up. There were too few data to assess the effects of resistance training.

Among 6 RCTs of various training interventions, 1 found significant benefits of intensive group aerobic exercise for walking (63) (n=56) and 1 found an incremental cost per QALY of £2,343 of a fitness programme comprising classes within local community centres (64) (n=66). However the other 4 RCTs (65–68) (n=59, n=75, n=87, n=380) found no benefit for function of active cycling, intensive exercise, stationary cycling, or individualised coaching.

Carer-mediated exercises

A Cochrane review (69) of 9 trials (of which 6 trials, n=333 patient-caregiver couples, were included in the meta-analysis) examined caregiver-mediated exercises (CME) for improving outcomes after stroke. The types of exercises examined by the included studies were constraint-induced movement therapy, exercise therapy, and vestibular rehabilitation (to improve balance and dizziness). No significant effect of CME was found on basic activities of daily living when pooling all trial data post intervention (4 studies; moderate-quality evidence) or at follow-up (2 studies; low-quality evidence). In addition, no significant effect of CME was found on extended activities of daily living at post intervention (2 studies; low-quality evidence) or at follow-up (2 studies; low-quality evidence). Caregiver burden did not increase at the end of the intervention (2 studies; moderate-quality evidence) or at follow-up (1 study; very low-quality evidence). At the end of intervention, CME significantly improved standing balance (3 studies; low-quality evidence) and quality of life in terms of physical functioning, mobility, and general recovery (1 study; very low-quality evidence). At follow-up, a significant effect was found of CME for Six-Minute Walking Test distance (1 study; very low-quality evidence). A significant effect was found in favour of the control group at the end of intervention for motor function (2 studies; low-quality evidence). No significant effects were found for other outcomes in the patient (motor impairment, upper limb function, mood, fatigue, length of stay and adverse events) or caregiver (mood and quality of life). In contrast to the primary analysis, sensitivity analysis of CME-core showed a significant effect of CME on basic activities of daily living post intervention (2 studies; moderate-quality evidence).

Yoga

A Cochrane review (70) of 2 RCTs (n=72) examined yoga for stroke rehabilitation. In the only meta-analysis of both studies, no significant effect was seen on balance (2 studies, n=69). In 1 study the Stroke Impact Scale measured quality of life across 6 domains: a significant effect was seen on the memory domain, but not on the other 5 domains (physical, emotion, communication, social participation, stroke recovery; low quality evidence). From data in the individual studies, no significant effects were seen on: quality of life; balance self-efficacy; gait; motor function; disability; depression or trait anxiety (though a significant effect was found for state anxiety). No adverse events were reported.

Activity monitors

A Cochrane review (71) of 4 RCTs (n=245) examined activity monitors for increasing physical activity in adult stroke survivors. Three studies were conducted in inpatient rehabilitation settings, and one was in a university laboratory. All studies compared use of activity monitor plus another intervention (e.g. a walking retraining programme or an inpatient rehabilitation programme) versus the other intervention alone. There was no significant effect for the use of activity monitors in conjunction with other interventions on step count in a community setting (1 RCT, n=27; very low-quality evidence), or in an inpatient rehabilitation setting (2 RCTs, n=83; very low-quality evidence). An activity monitor in addition to usual inpatient rehabilitation significantly increased the time spent on moderate intensity physical activity per day (1 RCT, n=48; low-quality evidence) compared with usual rehabilitation alone, but there was no significant effect for the use of an activity monitor plus usual rehabilitation for increasing time spent in vigorous intensity physical activity compared to usual rehabilitation (1 RCT, n=48; low-quality evidence).

Tai chi

An RCT (72) (n=145) found that tai chi did not affect the number of falls in stroke survivors.

Mental contrasting

An RCT (73) (n=183) found that structured information plus mental contrasting (an approach to positive thinking which includes components of realism and pragmatism) led to significantly more physical activity and more weight loss than 2 control groups (unstructured information or structured information).

Intelligence gathering

No additional information was identified for this section.

Impact statement

Physical fitness training

The Cochrane authors concluded that cardiorespiratory and mixed training reduce disability, which agrees with the guideline recommendation to encourage people to participate in physical activity after stroke, and that cardiorespiratory training for people with stroke should be started by a physiotherapist. The additional RCTs found were of heterogeneous interventions and provided no clear steer on any one intervention and are unlikely to substantially alter the Cochrane conclusion.

The Cochrane authors further concluded there is insufficient evidence to draw conclusions on resistance training. To make the recommendations on resistance training in NICE guideline CG162, the guideline committee used a previous version of the 2016 Cochrane review (from 2011) which also stated there was insufficient evidence on resistance training, but the committee performed their own analysis of the studies within the Cochrane review and arrived at a recommendation that resistance training for people with stroke should be started by a physiotherapist. The 2016 Cochrane included 6 new trials of resistance training taking the number of studies from 7 to 13. Positive findings of the 6 new trials are

aligned with the current guideline recommendations on resistance training.

New evidence is unlikely to change guideline recommendations.

Carer-mediated exercise

The Cochrane review found CME did not appear to benefit activities of daily living but did improve some other outcomes such as balance. The authors concluded that studies were small, heterogeneous, and some trials had an unclear or high risk of bias, and that future high-quality research should determine whether CME interventions are (cost-)effective. The new evidence is unlikely to affect the guideline which encourages and facilitates involvement of carers but does not specifically recommend that they help with exercise.

New evidence is unlikely to change guideline recommendations.

Yoga

The Cochrane authors concluded that yoga has potential as a stroke rehabilitation treatment but there is currently insufficient information to be conclusive and further robust trials are required. This is consistent with the guideline, which does not specifically recommend yoga, but does recommend encouraging people to participate in physical activity, and facilitating their participation in community activities, such as sports and leisure pursuits.

New evidence is unlikely to change guideline recommendations.

Activity monitors

The Cochrane review found that activity monitors did not increase step count but may increase time spent on moderate intensity activity. The authors concluded that there is currently not enough evidence to support the use of activity monitors to increase physical activity after stroke. This is consistent with the guideline which makes no recommendations on activity monitors.

New evidence is unlikely to change guideline recommendations.

Tai chi

The finding from 1 RCT that tai chi did not affect number of falls does not affect the guideline which makes no recommendations on it.

New evidence is unlikely to change guideline recommendations.

Mental contrasting

Although there was evidence that mental contrasting could increase physical activity and weight loss, it was a single study, and evidence from other trials (particularly in functional outcomes) would be needed before considering any impact on the guideline.

New evidence is unlikely to change guideline recommendations.

Interventions for the upper limb

2018 surveillance summary

General

A Cochrane overview (74) synthesised 40 systematic reviews (19 Cochrane; 21 non-Cochrane) of interventions for improving upper limb function after stroke. The 40 reviews contained 503 studies (n=18,078). Pooled data were extracted from 31 reviews related to 127 comparisons. Moderate-quality evidence showed:

- benefits of mental practice (based on: a Cochrane review from 2011 [which is the most recent version], a systematic review from 2013, and a systematic review from 2011);
- benefits of interventions for sensory impairment (based on a Cochrane review from 2010 [which is the most recent version] and a systematic review from 2009);
- greater effect of unilateral arm training than bilateral arm training (based on a systematic review from 2012).

Information was insufficient to reveal the relative effectiveness of different interventions. Moderate-quality evidence from subgroup analyses comparing greater and lesser doses of mental practice demonstrated a beneficial effect for the group given the greater dose, although not for the group given the smaller dose; however tests for subgroup differences did not suggest a significant difference between these groups.

(Evidence identified by the Cochrane overview on the following interventions, along with all other evidence found on these interventions, is discussed in the following specific sections of the evidence summary: constraint-induced movement therapy, mirror therapy, virtual reality, repetitive task training and transcranial electrical stimulation).

In 3 RCTs of video-based rehabilitation, 2 found significantly improved arm function (75,76) (n=61, n=67) but 1 found no improvement (77) (n=62).

Other interventions found by single RCTs to significantly benefit arm function were: electromyographic biofeedback (i.e. detecting a change in skeletal muscle activity, which is fed back to the user) (78) (n=100); hand-arm bimanual intensive training (79) (n=128); a self-rehabilitation programme (80) (n=59); device-assisted bilateral priming with active-passive movements before upper limb physiotherapy (81) (n=57); and bilateral upper limb task training of the ipsilesional and contralesional arms (82) (n=106).

No benefit for arm function was found by an RCT (83) (n=79) of noxious thermal stimulation (heat: 46 degrees C/ cold: 7 degrees C) versus innocuous thermal stimulation (heat: 40 degrees C/ cold: 20 degrees C).

Electrical stimulation

Among 8 RCTs of electrical stimulation in the upper limb, 2 found significantly improved arm function (84,85) (n=71, n=50), 1 found significantly improved manual dexterity (86) (n=80), 1 found significantly improved hand grip and pinch strength but not function (87) (n=73),

1 found significant improvement in pain (88) (n=90), and 3 found no benefits (89–91) (n=82, n=122, n=90).

Intelligence gathering

A topic expert noted that the Cochrane overview of interventions to improve upper limb function identified moderate quality evidence of a beneficial effect relating to several interventions which are not addressed in the guideline. These included mental practice, mirror therapy, interventions for sensory impairment, and virtual reality.

Impact statement

General

The Cochrane overview found benefits of mental practice, interventions for sensory impairment, and unilateral arm training, none of which are recommended by the guideline. A topic expert also drew attention to this evidence. However, the evidence base for these interventions was systematic reviews published from 2009 to 2013, therefore the majority of the evidence included in these reviews would have been available during development of NICE guideline CG162 (published 2013). No additional evidence on these interventions was found by the evidence searches for the current surveillance review. There is therefore unlikely to be an impact on the guideline.

(See the following specific sections of the evidence summary for impact statements from the Cochrane overview related to: constraint-induced movement therapy, mirror therapy, virtual reality, repetitive task training and transcranial electrical stimulation).

In the single trials, mixed results with video-based rehabilitation, and the heterogeneity of the other trials (despite evidence of benefit of electromyographic biofeedback, hand-arm bimanual intensive training, a self-rehabilitation programme, device-assisted bilateral priming with active-passive, and bilateral upper limb task training), mean they are unlikely to affect the guideline which currently makes no recommendations on these interventions for upper limb function.

New evidence is unlikely to change guideline recommendations.

Electrical stimulation

Mixed results from 8 RCTs (with some heterogeneity of the exact type and location of electrical stimulation, with different comparators, and not all benefits related to function) are unlikely to impact the guideline recommendation not to routinely offer electrical stimulation for the hand and arm, but to consider a trial of electrical stimulation in people who have evidence of muscle contraction after stroke but cannot move their arm against resistance.

New evidence is unlikely to change guideline recommendations.

Constraint-induced movement therapy

2018 surveillance summary

A Cochrane review (92) of 42 RCTs (n=1,453) examined constraint-induced movement therapy (CIMT) for upper extremities in people with stroke. The primary outcome was disability. The trials included participants who had some residual motor power of the paretic arm, the potential for further motor recovery and with limited pain or spasticity, but tended to use the limb little, if at all. Compared with conventional treatment, CIMT had no significant effect on disability immediately after the intervention (11 trials, n=344) or after a few months of follow-up, but did have a significant effect on the most frequently reported outcome of arm motor function (28 studies, n=858).

A Cochrane overview (74) (see 'Interventions for the upper limb: General' for details of included studies) found moderate-quality evidence of a beneficial effect of CIMT for the upper limb, and a beneficial effect for the group given the greater dose (although not for the group given the smaller dose); however tests for subgroup differences did not suggest a significant difference between these groups. It should be noted that these findings are partly based on an earlier 2010 version of the specific Cochrane review of CIMT.

Three RCTs (93–95) (n=60, n=159, n=86) all found that CIMT significantly improved arm function.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane review authors concluded that CIMT was associated with limited improvements in motor impairment and motor function, but that these benefits did not convincingly reduce disability. They noted that information about the long-term effects of CIMT is scarce and further trials are needed.

The Cochrane overview agreed that there were benefits of CIMT in the upper limb (though the specific Cochrane review of CIMT that this finding is partly based on has since been updated to the newer version discussed above).

The evidence from the individual RCTs of benefit on arm function broadly agreed with the Cochrane findings.

The benefits found in the new evidence of CIMT for arm function broadly align with the guideline recommendation to consider constraint-induced movement therapy (but the guideline states this is only for people who have movement of 20 degrees of wrist extension and 10 degrees of finger extension).

New evidence is unlikely to change guideline recommendations.

Shoulder pain

2018 surveillance summary

Three RCTs found that the following interventions significantly reduced shoulder pain: upper extremity aerobic exercise (arm crank ergometer) (96) (n=52); electrical stimulation applied to the supraspinatus and deltoids (97) (n=90); and a modified wheelchair arm-support (98) (n=120). A fourth RCT (99) (n=162) found that shoulder taping did not reduce pain.

Intelligence gathering

The National Clinical Guideline for Stroke (2016) Royal College of Physicians Intercollegiate Stroke Working Party recommends that people with shoulder pain after stroke should only be offered intra-articular steroid injections if they also have inflammatory arthritis.

Impact statement

The new evidence suggests that there are interventions that can reduce shoulder pain, but the trials were heterogeneous and evidence from other studies confirming effects are needed. There is currently unlikely to be an impact of these trials on the guideline which recommends managing shoulder pain after stroke using appropriate positioning and other treatments according to each person's need, but does not specify any particular treatments.

However, recommendations by the Royal College of Physicians Intercollegiate Stroke Working Party contain additional information not covered by NICE guideline CG162, namely on the types of patients with shoulder pain who should and should not receive intra-articular steroid injections.

All of the NICE recommendations on shoulder pain were based on a Delphi consensus process (namely an anonymous, consensus-building technique which uses information such as expert opinion rather than more formal evidence such as clinical trials). Whereas the recommendation on steroids from the Royal College of Physicians Intercollegiate Stroke Working Party was evidence based. Use of steroids for shoulder pain warrants investigation and may potentially impact the NICE guideline.

New evidence identified that may change guideline recommendations.

Repetitive task training

2018 surveillance summary

A Cochrane review (100) of 33 RCTs (36 intervention-control pairs, n=1,853) examined repetitive task training (RTT) for improving functional ability after stroke. There was low-quality evidence that RTT significantly improved arm function (11 studies, n=740), hand function (8 studies, n=619) and lower limb function (5 trials, n=419). There was moderate-quality evidence that RTT significantly improved

walking distance (9 studies, n=610) and functional ambulation (8 studies, n=525). Significant benefits of RTT persisted for up to 6 months post treatment for both upper-limb (3 studies, n=153) and lower-limb (8 studies, n=471), but not after 6 months. Effects were not modified by intervention type, dosage of task practice or time since stroke for upper or lower limb. There was insufficient evidence to be certain about the risk of adverse events.

A Cochrane overview (74) (see 'Interventions for the upper limb: General' for details of included studies) found moderate-quality evidence of a beneficial effect of RTT for the upper limb, and a beneficial effect for the group given the greater dose (although not for the group given the smaller dose); however tests for subgroup differences did not suggest a significant difference between these groups. It should be noted that these findings are based on an earlier 2008 version of the specific Cochrane review of RTT.

An RCT (101) (n=52) found that repetitive facilitative exercise (a combination of high repetition rate of movements of joints, and neurofacilitation) led to significantly improved arm function.

A second RCT (102) (n=50) found no benefit for arm function with SMART Arm (a non-robotic device that enables intensive and repetitive practice of reaching) plus outcome-triggered electrical stimulation.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane review authors concluded that there is low- to moderate-quality evidence that RTT improves upper and lower limb function; improvements were sustained up to 6 months post treatment.

The Cochrane overview agreed that there were benefits of RTT in the upper limb (though the specific Cochrane review of RTT that this finding is based on has since been updated to the newer version discussed above).

The mixed results from the 2 heterogeneous RCTs is unlikely to affect the Cochrane review and overview conclusions, which are aligned with the guideline recommendation to offer people repetitive task training after stroke on a range of tasks for upper limb weakness and lower limb weakness.

New evidence is unlikely to change guideline recommendations.

Walking therapies

2018 surveillance summary

Treadmill training

A Cochrane review (103) of 56 RCTs (n=3,105) examined treadmill training and body weight support for walking after stroke. The primary outcomes were walking speed, endurance, and dependency. Studies were carried out in both inpatient and outpatient settings. All participants had at least some walking difficulties and many could not walk without assistance. Treadmill training (with or without body weight support) did not significantly increase independent walking compared with other physiotherapy interventions (18 trials, n=1,210; low-quality evidence), but significantly increased walking velocity (47 trials, n=2,323; moderate-quality evidence) and walking distance (28 trials, n=1,680; moderate-quality evidence). Treadmill training with body weight support did not significantly increase walking velocity (12 trials, n=954; low-quality evidence) or walking distance (10 trials, n=882; low-quality evidence) at the end of scheduled follow-up. For participants who were independently walking at study onset, treadmill training significantly increased walking velocity (38 studies, n=1,571). There were insufficient data to comment on quality of life or activities of daily living. Adverse events and dropouts did not occur more frequently in people receiving treadmill training and these were not judged to be clinically serious events.

RCTs of high-speed treadmill training (104) (n=61) and treadmill walking training using body-weight support plus practice overground at clinics (105) (n=408) found significant improvements in walking. But other RCTs showed no benefits for walking of body-weight-supported treadmill training versus motor-learning overground walking training (106) (n=71), treadmill gait training with versus without visual biofeedback (107) (n=50), and a treadmill programme at an aerobic training intensity (55-85% heart rate maximum) with versus without simultaneous cognitive demands (108) (n=50). An RCT (109) (n=64) also found no benefit of a treadmill training programme over a stretching programme for self-efficacy or activities of daily living.

Community ambulation

A Cochrane review (110) of 5 RCTs (n=266) examined interventions for improving community ambulation in individuals with stroke. The primary outcome was participation; secondary outcomes included activity level outcomes related to gait and self-efficacy. All participants were adult stroke survivors, living in the community or a care home. Programmes to improve community ambulation consisted of walking practice in a variety of settings and environments in the community, or an indoor activity that mimicked community walking (including virtual reality or mental imagery). There was no significant effect of intervention compared with control on participation (2 studies, n=198), gait speed (4 studies, n=98); Community Walk Test, Walking Ability Questionnaire, 6-Minute Walk Test, and self-efficacy. Quality of evidence for all outcomes was considered to be low.

An RCT (111) (n=568) found that an outdoor mobility rehabilitation programme delivered by NHS therapists made no difference to health-related quality of life (social function) or functional ability, and was not cost-effective.

Circuit class therapy

A Cochrane review (112) of 17 RCTs (n=1,297) examined circuit class therapy (CCT; i.e. a supervised group forum for people to practise tasks) for improving mobility after stroke. Participants were stroke survivors living in the community or receiving inpatient rehabilitation. Most could walk 10 metres without assistance. CCT significantly increased distance in the 6-Minute Walk Test (10 studies, n=835; moderate quality evidence) and gait speed (8 studies, n=744; moderate quality evidence), which the authors considered to be clinically meaningful (based on findings from other studies cited by the review authors of minimum clinically-meaningful improvements). CCT also significantly benefited walking (5 studies, n=488 participants) and balance (Activities of Balance Confidence scale: 2 studies, n=103). However no benefit was seen on 2 other balance measures (Berg Balance Scale and Step Test). Independent mobility, functional ambulation and mobility, also improved more in CCT interventions compared with others (significance not reported in the abstract). CCT had no significant effect on length of stay (2 trials, n=217) or falls during therapy (8 trials, n=815; very low quality evidence). Time after stroke did not make a difference to the positive outcomes.

An RCT (113) (n=73) found that group therapy task training did not benefit mobility, gait speed, any other gait related parameters, depression or fatigue.

Arm sling

An RCT (114) (n=57) found that in hemiplegic patients with shoulder subluxation dependent on canes (single cane or quad cane) as walking aids, wearing an arm sling led to significantly longer walking endurance in patients using a single cane.

Task-oriented circuit gait training

An RCT (115) (n=144) found that task-oriented circuit gait training accompanied by a caregiver (to improve strength, balance, and task performance while standing and walking) led to significant improvements in 6-minute walk test, gait speed, balance and Timed Up and Go versus both strength training of lower extremities while sitting and lying and control (a 90-minute educational session on stroke management).

Intelligence gathering

A topic expert noted that many interventions focussing on lower limb / walking impairments (for which there are Cochrane reviews) are not included in the recommendations.

Impact statement

Treadmill training

The Cochrane authors concluded that overall, people after stroke who receive treadmill training, with or without body weight support, are not more likely to improve their ability to walk independently compared with people after stroke not receiving treadmill training, but walking

speed and walking endurance may improve slightly in the short term. Specifically, people with stroke who are able to walk (but not people who are dependent in walking at start of treatment) appear to benefit most from this type of intervention with regard to walking speed and walking endurance. This review did not find, however, that improvements in walking speed and endurance may have persisting beneficial effects.

The Cochrane review also found evidence that treadmill training with body weight support did not significantly increase walking velocity or walking distance, however it was low quality, and in addition an individual RCT of several hundred patients did show benefit of treadmill walking training using body-weight support.

Six further heterogeneous individual RCTs with mixed results did not add much information to the Cochrane conclusion that treadmill training (with or without body weight support) did not increase independent walking but significantly increased walking velocity and walking distance. This is aligned with, and therefore unlikely to affect, the guideline recommendation to consider treadmill training, with or without body weight support, as one option of walking training.

New evidence is unlikely to change guideline recommendations.

Community ambulation

The Cochrane authors concluded that there is currently insufficient evidence to establish the effect of community ambulation, and more research is needed.

An individual RCT showed no benefit of outdoor mobility rehabilitation, and overall the evidence is unlikely to affect the guideline which makes no specific recommendations on community or outdoor ambulation.

New evidence is unlikely to change guideline recommendations.

Circuit class therapy

The Cochrane authors' concluded that there is moderate evidence that circuit class therapy is effective in improving mobility for people after stroke. The effects may be greater later after the stroke, and are of clinical significance. A single RCT found no benefit of group therapy task training on mobility, but given its size was probably unlikely to influence the Cochrane conclusion.

The evidence from the Cochrane review, coupled with expert feedback that some walking therapies (such as circuit class therapy) - for which Cochrane reviews have shown benefit - are not included in the guideline, may have an impact on the guideline which does not currently recommend circuit class (i.e. group) therapy to improve mobility.

New evidence identified that may change guideline recommendations.

Arm sling

Although an arm sling appeared to improve walking endurance, the evidence was from a single trial and further studies to reinforce these findings would be useful before considering any impact on the guideline which makes no

recommendations on arm slings for mobility.

New evidence is unlikely to change guideline recommendations.

Task-oriented circuit gait training

Although task-oriented circuit gait training improved walking and balance, the evidence was from a single trial and further studies to reinforce these findings would be useful before considering any impact on the guideline which makes no recommendations on this intervention.

New evidence is unlikely to change guideline recommendations.

Electromechanical and robot-assisted training

2018 surveillance summary

Electromechanical and robot-assisted gait training

A Cochrane review (116) of 36 RCTs (n=1,472) examined electromechanical-assisted training for walking after stroke. The primary outcome was independent walking at follow-up. Electromechanical-assisted gait training in combination with physiotherapy significantly increased the odds of independent walking (moderate-quality evidence) but not walking velocity (low-quality evidence) or walking distance (very low-quality evidence). A planned subgroup analysis suggested that people in the acute phase may benefit, but people in the chronic phase may not benefit from electromechanical-assisted gait training (significance not reported in the abstract). Post hoc analyses: found non-ambulatory people at intervention onset may benefit, but ambulatory people may not; and found no differences between the types of devices used in studies regarding ability to walk, but did find significant differences between devices in terms of walking velocity.

An RCT (117) (n=58) found that a lower limb rehabilitation robot significantly improved leg strength and balance, but another RCT (118) (n=74) found that add-on robot-assisted gait training did not improve walking ability.

Electromechanical and robot-assisted arm training

A Cochrane review (119) of 45 RCTs (n=1,619) examined electromechanical and robot-assisted arm training for improving activities of daily living, arm function, and arm muscle strength after stroke. Electromechanical and robot-assisted arm training significantly improved activities of daily living scores (24 studies, n= 957; high-quality evidence), arm function (41 studies, n=1,452; high-quality evidence), and arm muscle strength (23 studies, n=826; high-quality evidence). Electromechanical and robot-assisted arm training did not significantly increase participant dropout (45 studies, n=1,619; high-quality evidence), and adverse events were rare.

Two RCTs (120,121) (n=54, n=127) found that robot-assisted therapy led to significant benefits for arm function.

Intelligence gathering

No additional information was identified for this section.

Impact statement

Electromechanical and robot-assisted gait training

The Cochrane authors concluded that people who receive electromechanical-assisted gait training in combination with physiotherapy after stroke are more likely to achieve independent walking than people who receive gait training without these devices (though there were variations across studies in the level of independent walking at study start, devices used, duration and frequency of treatment, and use of electrical stimulation). The authors also stated that further research is needed to address questions about frequency and duration of electromechanical-assisted gait training as well as how long any benefit may last.

Mixed results from 2 heterogeneous trials are unlikely to affect the Cochrane conclusion, which is aligned with guideline recommendation to offer electromechanical gait training only in the context of a research study.

New evidence is unlikely to change guideline recommendations.

Electromechanical and robot-assisted arm training

The Cochrane authors concluded that electromechanical and robot-assisted arm training might improve activities of daily living, arm function, and arm muscle strength. However, they stated results should be interpreted with caution because although evidence quality was high, there were variations between trials in: intensity, duration, and amount of training; type of treatment; participant characteristics; and measurements used.

Two individual trials also agreed that robot-assisted therapy could improve arm function. Overall, the new evidence may affect the guideline which does not currently make recommendations on electromechanical and robot-assisted arm training.

An NIHR health technology assessment (RATULS: Robot Assisted Training for the Upper Limb after Stroke) comprising an RCT of 720 participants is underway. It began in January 2014 (intention to publish date August 2020) and may provide additional useful data in this area.

New evidence identified that may change guideline recommendations.

Ankle–foot orthoses

2018 surveillance summary

Three RCTs found no difference in walking between the following interventions: a therapist-made ankle-foot orthosis (SWIFT Cast) versus conventional physical therapy (which included use of off-the-shelf and orthotist-made ankle-foot orthoses) (122) (n=105); ankle foot orthosis versus electrical foot drop stimulator (123) (n=197); or off-the-shelf versus bespoke ankle-foot orthoses (124) (n=139).

Intelligence gathering

No additional information was identified for this section.

Impact statement

Although the trials found no difference in outcome between the interventions examined, 2 of the 3 trials compared different orthosis types and therefore do not provide evidence of lack of effectiveness of orthoses generally.

The guideline recommends considering ankle–foot orthoses for people who have difficulty with swing-phase foot clearance and/or stance-phase control that affects walking, but does not specify orthosis type, so the evidence is unlikely to have an impact.

New evidence is unlikely to change guideline recommendations.

Electrical stimulation: lower limb

2018 surveillance summary

Of 5 RCTs examining electrical stimulation of the lower limb, only 1 (125) (n=80) found any significant positive effects (of bilateral over unilateral electrical stimulation for results on the Timed Up and Go test). In 5 reports (126–130) of the other 4 RCTs (n=50, n=72, n=110, n=83), no benefit was found of electrical lower limb stimulation on walking.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The guideline currently states 'For guidance on functional electrical stimulation for the lower limb see Functional electrical stimulation for drop foot of central neurological origin (NICE interventional procedure guidance 278).'

None of the trials were specifically for foot drop, and therefore the evidence of the lack of benefit of electrical lower limb stimulation on walking is unlikely to affect the guideline which makes no recommendations on electrical stimulation for lower limb in general.

New evidence is unlikely to change guideline recommendations.

1.10 Self-care

Surveillance decision

This section of the guideline should not be updated.

Editorial amendments

To clarify the meaning of the term 'neglect' in recommendation 1.10.1 in the context of this guideline, a hyperlink to the definition of 'neglect' in 'Terms used in this guideline' will be added. (This will create consistency with recommendation 1.4.3 which also mentions neglect and provides a hyperlink to the definition of 'neglect' in 'Terms used in this guideline').

Recommendation 1.10.6 cross-refers to NICE guideline PH19 Workplace health. The current link is broken and will be fixed.

Occupational therapy

2018 surveillance summary

Occupational therapy for adults

A Cochrane review (131) of 9 RCTs (n=994) examined occupational therapy for adults with problems in activities of daily living after stroke. Occupational therapy significantly increased performance scores (7 studies, n=749; low-quality evidence) and significantly reduced the risk of poor outcome (death, deterioration or dependency in personal activities of daily living; 5 studies, n=771; low-quality evidence). Those who received occupational therapy were significantly more independent in extended activities of daily living (5 studies, n=665 participants; low-quality evidence). Occupational therapy did not benefit: mortality (8 studies, n=950), combined odds of death and institutionalisation (4 studies, n=671), combined odds of death and dependency (4 trials, n=659), or mood or distress (4 studies, n=519; low-quality evidence).

An RCT (132) (n=280) found that versus usual occupational therapy, after 3 months, client-centred occupational therapy (i.e. integrating the person's unique lived experiences for goal setting and collaboration) had no impact on (for patients) independence, life satisfaction, use of home-help service, and satisfaction with training, or (for carers) caregiver burden, life satisfaction, or informal care. The only significant benefit of client-centred occupational therapy was in the Stroke Impact Scale 'emotion' domain. A 12-month follow up study of the carers (133) (n=183) showed there was still no impact on caregiver burden or satisfaction with life.

Occupational therapy for care home residents

A Cochrane review (134) of 1 RCT (n=118) examined occupational therapy for care home residents with stroke. There was

insufficient evidence to support or refute the efficacy of occupational therapy interventions for improving, restoring or maintaining independence in activities of daily living for stroke survivors residing in care homes.

An RCT (135) (n=1,042) found that among residents in UK care homes with a history of stroke or transient ischaemic attack and living with stroke-related disabilities, a personalised 3-month course of occupational therapy delivered by qualified therapists (supported by care workers trained to support personal activities of daily living) did not improve activities of daily living, mobility or quality of life versus usual care.

Intelligence gathering

A topic expert noted that activities of daily living are not limited to dressing.

Impact statement

Occupational therapy for adults

The Cochrane authors concluded that low-quality evidence showed occupational therapy targeted towards activities of daily living after stroke can improve performance in activities of daily living and reduce the risk of deterioration in these abilities, but noted that the included studies had methodological flaws.

The Cochrane review is aligned with the guideline recommendation to provide occupational therapy for people who are likely to benefit, to address difficulties with personal activities of daily living. Examples of occupational therapy strategies are given that include dressing, but the overarching recommendation covers any relevant occupational therapy and any difficulties with activities of daily living, therefore there is unlikely to be an impact of the expert comment that activities of daily living are not limited to dressing.

The individual RCT and follow-up study which found minimal benefits of occupational therapy centred on the patient's lived experiences is unlikely to affect the guideline which does not specify this type of therapy.

New evidence is unlikely to change guideline recommendations.

Occupational therapy for care home residents

The Cochrane authors found only 1 relevant trial and concluded the effectiveness of occupational therapy for the population of stroke survivors residing in care homes remains unclear, and further research in this area is warranted.

The additional individual RCT was a much larger population than the single study in the Cochrane review, and suggested that a 3-month course of occupational therapy for residents of care homes with a history of stroke had no additional benefits for activities of daily living, mobility or quality of life versus usual care. Expert comments within an NIHR signal about this larger RCT noted that patients in the study were very frail and cognitively impaired, therefore the message may not necessarily be that people in care homes should not be encouraged to be independent or participate in activities, but that a rehabilitation approach may not work for

people with significant comorbidities and impairments.

The new evidence may affect the guideline which, although stating that occupational therapy should be provided to people who are likely to benefit, does not discuss potentially different requirements for people in care homes.

New evidence identified that may change guideline recommendations.

Return to work

2018 surveillance summary

An RCT (136) (n=80) found that following a workplace intervention programme (tailored to functional ability and workplace challenges), significantly more patients returned to work than in the control group (usual stroke care which considered job requirements but without workplace intervention). Those who returned to work had significantly better quality of life than those who did not.

Intelligence gathering

No additional information was identified for this section.

Impact statement

Evidence of the benefits of a workplace intervention tailored to functional ability and workplace challenges is aligned with the guideline recommendation to actively manage return-to-work issues which should include: identifying the physical, cognitive, communication and psychological demands; identifying any impairments on work performance; and tailoring an intervention.

New evidence is unlikely to change guideline recommendations.

Self-management programmes

2018 surveillance summary

A Cochrane review (137) of 14 RCTs (n=1,863) examined self-management programmes for quality of life in people with stroke. Content and topics routinely consisted of stroke-related education (including secondary prevention), self ratings, problem identification, reinforcing resources and capabilities, self efficacy and control, social support, stress management, goal setting, and problem-solving. From a meta-analysis of 6 studies, self-management programmes significantly improved both quality of life (moderate quality evidence) and self efficacy (low quality evidence) compared with usual care. Individual studies reported benefits for health-related behaviours such as reduced use of health services, however,

there was no superior effect on locus of control or activities of daily living.

Two RCTs (138,139) (n=128, n=210) found that a nurse-led stroke self-management programme, and a patient empowerment intervention for stroke self-management, respectively, significantly improved self-efficacy.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded that self management programmes may benefit quality of life and self efficacy in people with stroke who are living in the community. They noted that programme leaders were usually professionals but peers (stroke survivors and carers) were also reported - the commonality was being trained and expert in stroke and its consequences. They noted the need for further research on key features of self management programmes.

The 2 individual studies agreed with the Cochrane review regarding benefits of self-management.

The content of the programmes identified by the Cochrane review was broad, but the themes within them such as education, problem identification, self efficacy and control, social support, stress management, goal setting, and problem-solving, are all broadly covered by the guideline. The finding that programmes were led mainly by professionals but with some examples of knowledgeable patients and carers being involved, is also broadly aligned with the guideline which suggests training carers and providing information to patients. Therefore there is unlikely to be an impact on the guideline.

New evidence is unlikely to change guideline recommendations.

Motivational interviewing

2018 surveillance summary

A Cochrane review (140) of 1 RCT (n=411) examined motivational interviewing (a way of enhancing intrinsic motivation) for improving recovery after stroke. At 3-months and 12-months follow-up, no significant differences were found between motivational interviewing or usual stroke care for participants who were not dependent on others for activities of daily living, nor on the death rate, but participants receiving motivational interviewing were significantly more likely to have a normal mood than those who received usual care.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded that there is insufficient evidence to support the use of motivational interviewing for

improving activities of daily living after stroke and further studies are needed.

The evidence is unlikely to affect the guideline which makes no recommendations on motivational interviewing.

New evidence is unlikely to change guideline recommendations.

1.11 Long-term health and social support

Surveillance decision

This section of the guideline should not be updated.

Editorial amendments

Recommendation 1.11.3 refers to a web page (www.dft.gov.uk/dvla/medical/aag) for DVLA requirements. This link is outdated and will be updated to https://www.gov.uk/stroke-and-driving

Recommendation 1.11.6 cross-refers to NICE guideline CG36 Atrial fibrillation, NICE guideline CG67 Lipid modification, and NICE guideline CG87 Type 2 diabetes (which have now been replaced by NICE guideline CG180 Atrial fibrillation, NICE guideline CG181 Cardiovascular disease, and NICE guideline NG28 Type 2 diabetes in adults, respectively). The cross-referrals will be updated.

Faecal incontinence and constipation

2018 surveillance summary

A Cochrane review (141) of 20 RCTs (n=902) examined management of faecal incontinence and constipation in adults with central neurological diseases. From the trials in patients with stroke: abdominal massage significantly improved the number of bowel motions compared with no massage (1 trial, n=31); a one-off educational intervention from nurses (a structured nurse assessment leading to targeted education versus routine care) led to a short term benefit (less than 6 months) for number of bowel motions per week but this did not persist at 12 months (1 trial; number of participants not stated in the abstract); and oral carbonated water (rather than tap water) improved constipation scores (1 trial; number of participants not stated in the abstract).

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded that evidence was mainly low quality and difficult to interpret because interventions were heterogeneous across trials, and very different from each other. There was very limited evidence from individual trials in favour of abdominal massage and oral carbonated water (rather than tap) but findings need to be confirmed by other trials.

The evidence is unlikely to affect the guideline which makes no specific recommendations on managing faecal incontinence and constipation in stroke, but states to manage incontinence after stroke in line with recommendations in Faecal incontinence (NICE clinical guideline 49).

New evidence is unlikely to change guideline recommendations.

Longer-term stroke care

2018 surveillance summary

An RCT (142) (n=800 patients and 208 carers) found that a new post-discharge system of care (comprising a structured assessment covering longer-term problems in patients and carers) had no effect on patient General Health Questionnaire, costs of stroke care coordinator inputs, total health and social care costs, or QALY gains.

An RCT (143) (n=186) found that a structured, community-based programme to enhance participation post-stroke (including exercise and project-based activities, done as individuals and in groups) led to significant gains in satisfaction with community integration and health-related quality of life. Randomisation to immediate or 4-month delayed entry did not affect outcomes.

Intelligence gathering

A topic expert stated there should be more emphasis on the importance of the third sector (e.g. Stroke Association) involvement and peer support through stroke clubs, stroke exercise and arts groups (e.g. stroke choirs).

Impact statement

The RCT of a new post-discharge system of care found no benefit and is unlikely to affect the current guideline recommendation to review the health and social care needs of people after stroke and the needs of their carers at 6 months and annually thereafter.

The benefits of the structured, community-based programme to enhance participation shown in the second RCT are broadly aligned with the recommendation to encourage people to focus on life after stroke and help them to achieve their goals. This may include: facilitating their

participation in community activities, such as shopping, civic engagement, sports and leisure pursuits, visiting their place of worship and stroke support groups; and supporting their social roles, for example, work, education, volunteering, leisure, family and sexual relationships. This recommendation also broadly covers the issues highlighted by the topic expert about emphasising the third sector and peer support.

Additionally, the concerns raised by the topic expert about links with third sector organisations are addressed in the NHS Long Term Plan (January 2019), which promotes partnership with voluntary organisations, including the Stroke Association.

New evidence is unlikely to change guideline recommendations.

Areas not currently covered in the guideline

In surveillance, evidence was identified for areas not covered by the guideline. This new evidence has been considered for possible addition as new sections of the guideline.

Surveillance decision

The following new sections should be added:

- Transcutaneous electrical nerve stimulation (TENS) for spasticity
- Music therapy
- Mirror therapy

Transcutaneous electrical nerve stimulation (TENS) for spasticity

2018 surveillance summary

A systematic review (144) of 15 RCTs, quasi-RCTs, and non-RCTs (number of participants, and makeup of exact study types included, not specified in the abstract) examined transcutaneous electrical nerve stimulation (TENS) for poststroke spasticity. It found that TENS plus other physical therapy was significantly more effective at reducing lower limb spasticity versus placebo, and versus other physical therapy alone. There were limited studies of TENS for upper limb spasticity.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The review authors concluded that TENS plus other physical therapy is effective in reducing lower limb spasticity when applied for more than 30 minutes over nerve or muscle belly in chronic stroke survivors.

The guideline makes no recommendations on TENS for lower limb spasticity therefore the new evidence may affect the guideline.

New evidence identified that may change guideline recommendations.

Peripheral magnetic stimulation

2018 surveillance summary

A Cochrane review (145) of 3 RCTs (n=121) examined repetitive peripheral magnetic stimulation (rPMS) for activities of daily living and functional ability in people after stroke. There was no significant effect of rPMS on activities of daily living at the end of treatment or at the end of follow-up (number of studies in the analysis not stated in the abstract; low-quality evidence). There was no significant difference with rPMS in improvement of upper limb function at the end of treatment or at the end of follow-up (1 study, n=63), nor with improved muscle strength at the end of treatment (1 trial, n=18). One study (number of participants not stated in the abstract) reported a significant decrease in spasticity of the elbow at the end of follow-up.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded that there is inadequate evidence to permit any conclusions about routine use of rPMS for people after stroke, and additional trials are needed. The evidence is consistent with the guideline which makes no recommendations on peripheral magnetic stimulation.

New evidence is unlikely to change guideline recommendations.

Transcranial magnetic stimulation

2018 surveillance summary

Transcranial magnetic stimulation for function

A Cochrane review (146) of 19 RCTs (n=588) examined repetitive transcranial magnetic stimulation (rTMS) for improving function after stroke. rTMS was not associated with a significant improvement in activities of daily living (2 RCTs, n=183) nor motor function (4 RCTs, n=73). Subgroup analyses of different stimulation frequencies or duration of illness also showed no significant difference. Few mild adverse events were observed with rTMS, the most common were transient or mild headaches and local discomfort at the site of the stimulation.

Four RCTS (147–150) (n=58, n=66, n=54, n=112) all found significant benefit of rTMS for arm function. However the trials were all of heterogeneous methods and types of rTMS and their comparators differed.

Transcranial magnetic stimulation for aphasia

An RCT (151) (n=56) found that transcranial magnetic stimulation significantly improved aphasia, object-naming accuracy, and naming reaction time.

Intelligence gathering

No additional information was identified for this section.

Impact statement

Transcranial magnetic stimulation for function

The Cochrane authors concluded that current evidence does not support the routine use of rTMS for the treatment of stroke to improve function and further trials are needed.

Although benefits of rTMS were seen in individual trials, the heterogeneity of interventions and comparators does not provide a clear disagreement with the Cochrane conclusion.

The Cochrane review is consistent with and unlikely to affect the guideline which makes no recommendations on rTMS for function.

New evidence is unlikely to change guideline recommendations.

Transcranial magnetic stimulation for aphasia

Although a single RCT showed benefits of transcranial magnetic stimulation for aphasia, further studies confirming these effects are needed before considering any impact on the guideline which makes no recommendations on transcranial magnetic stimulation for aphasia.

New evidence is unlikely to change guideline recommendations.

Transcranial electrical stimulation

2018 surveillance summary

Transcranial electrical stimulation for function

A Cochrane review (152) of 32 RCTs (n=748) examined transcranial direct current stimulation (tDCS) for improving activities of daily living, and physical and cognitive functioning, in people after stroke. A significant benefit of tDCS versus sham tDCS (or any other passive intervention) was found on activities of daily living performance at the end of the intervention period (9 studies, n=396; moderate quality evidence) and at the end of follow-up (6 studies, n=269; moderate quality evidence). However, the results did not persist in a sensitivity analysis of trials of higher methodological quality. For upper extremity function, no evidence of an effect of tDCS was found at the end of the intervention period (12 trials, n=431; low quality evidence) or at the end of follow-up (4 studies, n=187; low quality evidence). There was no evidence of an effect on muscle strength at the end of the intervention period (10 studies, n=313) or at follow-up (3 studies, n=156). The proportions of dropouts and adverse events were comparable between groups in the 6 studies reporting these data (low quality evidence).

A Cochrane overview (74) (see 'Interventions for the upper limb: General' for details of included studies) found high-quality evidence that transcranial direct current stimulation had no benefit for outcomes of activities of daily living. It should be noted that these findings are based on an earlier 2013 version of the specific Cochrane review of transcranial direct current stimulation.

Three RCTS (153–155) (n=90, n=60, n=164) all found significant benefits of transcranial electrical stimulation (2 on arm function, 1 on general stroke impairment). However the trials were all of heterogeneous methods and types of transcranial electrical stimulation and their comparators differed.

Transcranial electrical stimulation for aphasia

A Cochrane review (156) of 12 RCTs (n=136) examined transcranial direct current stimulation (tDCS) for improving aphasia in patients with aphasia after stroke. None of the included studies used any formal measure for the primary outcome of functional communication (that is, measuring aphasia in a real-life communicative setting). A meta-analysis of 6 trials (n=66) of the secondary outcome of correct picture naming found that tDCS did not significantly enhance SLT outcomes. No studies were found examining tDCS for cognition in stroke patients with aphasia. No reported adverse events were found and the proportion of dropouts was comparable between groups.

An RCT (157) (n=74) found that tDCS added to outpatient speech therapy did not improve the ability to name common objects.

Transcranial electrical stimulation for dysphagia

An RCT (158) (n=60) found that tDCS led to significant improvements in the Fiberoptic Endoscopic Dysphagia Severity Scale.

Intelligence gathering

No additional information was identified for this section.

Impact statement

Transcranial electrical stimulation for function

The Cochrane review authors concluded that evidence of very low to moderate quality is available on tDCS (anodal/cathodal/dual) for improving activities of daily living, and further studies are needed. Although some evidence of benefit of tDCS on activities of daily living was found, this effect was not seen when only higher quality trials were analysed.

The Cochrane overview found no benefits of transcranial direct current stimulation on activities of daily living, however these findings have been superseded by the more recent specific Cochrane review of tDCS discussed above.

Although benefits of transcranial electrical stimulation were seen in individual trials, the heterogeneity of interventions and comparators does not provide a clear disagreement with the Cochrane review conclusion.

The Cochrane review is consistent with and unlikely to affect the guideline which makes no recommendations on transcranial electrical stimulation for function.

New evidence is unlikely to change guideline recommendations.

Transcranial electrical stimulation for aphasia

The Cochrane authors concluded that there is no evidence of the effectiveness of tDCS (anodal, cathodal and bihemispheric) for improving functional communication, language impairment and cognition in people with aphasia after stroke, and further studies are needed.

An individual RCT also found that tDCS did not improve communication. The new evidence is consistent with and unlikely to affect the guideline which makes no recommendations on transcranial electrical stimulation for aphasia.

New evidence is unlikely to change guideline recommendations.

Transcranial electrical stimulation for dysphagia

Although a single RCT showed benefits of transcranial electrical stimulation for dysphagia, further studies confirming these effects are needed before considering any impact on the guideline which makes no recommendations on transcranial electrical stimulation for dysphagia.

New evidence is unlikely to change guideline recommendations.

Telerehabilitation and active telephone support

2018 surveillance summary

A Cochrane review (159) of 10 trials (n=933) examined telerehabilitation for stroke. A case management intervention had no significant effect on independence in activities of daily living (2 studies, n=661). A computer programme to remotely retrain upper limb function had no significant effect on upper limb function (2 studies, n=46). Evidence was insufficient to draw conclusions on the effects on mobility, health-related quality of life or participant satisfaction.

Two RCTs (160,161) (n=186, n=124) found no benefit of either: regular active phone support for patients (patients contacted weekly at first, then biweekly and monthly – focusing on new or ongoing issues, as well as 6 key areas, including family functioning and individualised risk factors, plus information provision); or home-based tele-rehabilitation, on outcomes such as health services use, quality of life, function or disability.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane authors concluded they had found insufficient evidence to reach conclusions about the effectiveness of telerehabilitation. Two individual trials found no benefit of active phone support or telerehabilitation.

Overall the new evidence is unlikely to affect the guideline which, although including a recommendation about optional telephone conversations to give information to people who are continuing an exercise programme independently, does not make specific recommendations on telerehabilitation or generalised active phone support.

New evidence is unlikely to change guideline recommendations.

Rehabilitation for car driving

2018 surveillance summary

A Cochrane review (162) of 4 RCTs (n=245) examined rehabilitation for improving car driving after stroke. Interventions, controls and outcome measures varied, therefore studies were not pooled. Interventions included the contextual approach of driving simulation and underlying skill development approach, including the retraining of speed of visual processing and visual motor skills. There was no clear evidence of improved on-road scores immediately after training in any of the 4 included studies. Nor was there improvement in on-road scores at 6 months (1 study, n=83). Road sign recognition was significantly better in people who underwent training compared with control (1 study, n=73). A simulator-

based driving rehabilitation programme also had significant benefits (outcomes not specified in the abstract; 1 study, n=73).

Intelligence gathering

A topic expert noted that return to driving was not currently covered by the guideline.

Impact statement

The Cochrane authors' concluded that there was insufficient evidence to reach conclusions about the use of rehabilitation to improve on-road driving skills after stroke, or about which impairments are amenable to rehabilitation, and whether contextual or remedial approaches, or a combination, are more efficacious. They found limited evidence that the use of a driving simulator may be beneficial in improving visuocognitive abilities, such as road sign recognition that are related to driving, but were unable to find any RCTs that evaluated on-road driving lessons as an intervention.

The new evidence is unlikely to affect the guideline, which cross-refers to the Driver and Vehicle Licensing Agency about requirements for driving after stroke, but does not make specific recommendations about rehabilitation strategies to improve driving.

New evidence is unlikely to change guideline recommendations.

Music therapy

2018 surveillance summary

A Cochrane review (163) of 29 RCTs (n=775) examined music interventions for acquired brain injury. Rhythmic auditory stimulation significantly improved the following gait parameters after stroke: gait velocity (9 trials, n=268; moderate-quality evidence); stride length of the affected side (5 trials, n=129; moderate-quality evidence); general gait (2 trials, n=48); and gait cadence in terms of steps per minute (7 trials, n=223 participants; low-quality evidence). Music interventions also significantly improved the timing of upper extremity motor function (2 trials, n=122; very low-quality evidence). Music interventions significantly improved communication in people with aphasia following stroke (3 trials, n=67; very low-quality evidence). Specific communication improvements were in naming tests (2 trials, n=35) and speech repetition tests (2 trials, n=35). Rhythmic auditory stimulation improved quality of life (2 trials, n=53 participants; low-quality evidence). There was no strong evidence for effects on memory and attention.

An RCT (164) (n=160) found that microcirculation with monitoring feedback and somatosensory music therapy added to usual rehabilitation training led to significantly increased muscle strength than rehabilitation training alone.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane review found that music interventions may be beneficial for gait, the timing of upper extremity function, communication outcomes, and quality of life after stroke. The strongest evidence appeared to be for the effect of rhythmic auditory stimulation (a type of neurologic music therapy) on gait parameters.

A single additional trial found benefits of music therapy when added to another intervention.

The new evidence may impact the guideline, which does not currently make recommendations about music therapy.

New evidence identified that may change guideline recommendations.

Virtual reality

2018 surveillance summary

A Cochrane review (165) of 72 trials (n=2,470) examined virtual reality for stroke rehabilitation. Interventions varied in terms of the goals of treatment and the virtual reality devices used. Control groups usually received no intervention or therapy based on a standard-care approach. For upper limb function, no significant effects were seen when comparing virtual reality to conventional therapy (22 studies, n=1038; low-quality evidence) but there was a significant effect when virtual reality was used in addition to usual care (10 studies, n=210; low-quality evidence). Significant effects were also seen for activities of daily living (10 studies, n=466; moderate-quality evidence). When compared to conventional therapy approaches there were no significant effects for gait speed or balance. Results for cognitive function, participation restriction, or quality of life could not be pooled. Twenty-three studies reported that they monitored for adverse events; across these studies there were few adverse events and those reported were relatively mild.

A Cochrane overview (74) (see 'Interventions for the upper limb: General' for details of included studies) found moderate-quality evidence of a beneficial effect of virtual reality for the upper limb (however this was based on findings from an earlier 2011 version of the specific Cochrane review of virtual reality).

Among 4 RCTs of virtual reality training, two (166,167) (n=120, n=73) found no benefit of upper extremity virtual reality rehabilitation training and conventional training, or of motivating virtual reality rehabilitation and novel gesture controlled interactive motion capture, for arm function or walking. Whereas two (168,169) (n=59, n=136) found significant benefit of virtual reality exercises that challenged balance while standing, and of reinforced feedback in a virtual environment for upper limb rehabilitation, on leg impairment and arm function.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane review found a large number of RCTs, but the evidence was mostly low quality. The review found that virtual reality and interactive video gaming was not more beneficial than conventional therapy approaches in improving upper limb function. Virtual reality may be beneficial in improving upper limb function and activities of daily living function when used as an adjunct to usual care (to increase overall therapy time). There was insufficient evidence to reach conclusions about the effect of virtual reality and interactive video gaming on gait speed, balance, participation, or quality of life.

The Cochrane overview found benefits of virtual reality for the upper limb, however these findings have been superseded by the more recent specific Cochrane review of virtual reality discussed above.

Mixed results from individual trials of heterogeneous interventions did not add much to the Cochrane conclusion.

Overall the evidence is consistent with the guideline which makes no recommendations on virtual reality.

New evidence is unlikely to change guideline recommendations.

Mirror therapy

2018 surveillance summary

A Cochrane review (170) of 62 RCTs (n=1,982) examined mirror therapy for improving motor function after stroke. Mirror therapy was provided 3 to 7 times a week, between 15 and 60 minutes for each session for 2 to 8 weeks (on average 5 times a week, 30 minutes a session for 4 weeks). Comparator interventions included: standard rehabilitation; sham therapy (covered reflecting side of mirror, or non-reflecting side of mirror pointing at the unaffected arm); no mirror or plexiglass; or other interventions (electromyographic-triggered/electrical muscle stimulation, conventional therapy, motor imagery, passive mobilisation of the affected limb, transcranial magnetic stimulation, task-oriented training, motor relearning programme, lower limb activities, or constraint-induced movement therapy).

Moderate-quality evidence showed that compared with all other interventions, mirror therapy had a significant effect on motor function (36 studies, n=1,173) and motor impairment (39 studies, n=1,292). However, effects on motor function were influenced by the type of control intervention. Additionally, moderate-quality evidence showed that mirror therapy significantly improved activities of daily living (19 studies, n=622). Low-quality evidence showed a significant benefit for pain (6 studies, n=248) but no effect for improving visuospatial neglect (5 studies, n=175). No adverse effects were reported.

A Cochrane overview (74) (see ‘Interventions for the upper limb: General’

for details of included studies) found moderate-quality evidence of a beneficial effect of mirror therapy for the upper limb. It should be noted that these findings are based on an earlier 2012 version of the specific Cochrane review of mirror therapy.

Two RCTs found significant benefit of mirror therapy plus extracorporeal shock wave therapy on motor function and spasticity (171) (n=120), and of mirror therapy plus neuromuscular electrical stimulation on walking (172) (n=69).

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane review authors concluded that there is evidence for the effectiveness of mirror therapy for improving upper extremity motor function, motor impairment, activities of daily living, and pain, at least as an adjunct to conventional rehabilitation for people after stroke. Limitations are small sample sizes and lack of reporting of methodological details, resulting in uncertain evidence quality.

The Cochrane overview agreed that there were benefits of mirror therapy in the upper limb (though the specific Cochrane review of mirror therapy that this finding is based on has since been updated to the newer version discussed above).

The individual RCTs agreed with the Cochrane findings that there is benefit of mirror therapy, though it was combined with other interventions.

Overall the evidence suggests that mirror therapy is effective for certain outcomes, which may have an impact on the guideline that currently makes no recommendations on it.

New evidence identified that may change guideline recommendations.

Post-stroke fatigue

2018 surveillance summary

A Cochrane review (173) of 12 RCTs (n=703) examined interventions for post-stroke fatigue. Six trials with 7 comparisons provided data suitable for meta-analysis: 2 pharmacological interventions (fluoxetine and OSU6162), 3 dietary supplements (enerion, citicoline, and a combination of Chinese herbs) and 2 non-systemic interventions (a fatigue education programme, and a mindfulness-based stress reduction programme). Fatigue severity was significantly lower in the intervention groups than in the control groups (n=244), with significant heterogeneity between trials. The beneficial effect was not seen in trials with adequate allocation concealment (2 trials, n=89) or trials with adequate blinding of outcome assessors (4 trials, n=198). The following interventions showed no benefit for post-stroke fatigue: tirilazad mesylate, continuous positive airway pressure for sleep apnoea, antidepressants, and a self-

management programme for recovery from chronic diseases.

Intelligence gathering

It was noted that of the drugs examined in the Cochrane review, only fluoxetine is licensed in the UK (though not for post-stroke fatigue).

Impact statement

The Cochrane authors concluded that trials to date have been small and heterogeneous, and some have had a high risk of bias, so there was insufficient evidence on the efficacy of any intervention to treat or prevent fatigue after stroke and more studies are needed.

The new evidence is consistent with the guideline which, although in recommendations about return to work states that fatigue may prevent attendance for a full day at work, does not make any recommendations on interventions for fatigue.

New evidence is unlikely to change guideline recommendations.

Acupuncture

2018 surveillance summary

A Cochrane review (174) of 31 RCTs (n=2,257) examined acupuncture for stroke rehabilitation. Two trials compared real acupuncture plus baseline treatment with sham acupuncture plus baseline treatment. There was no evidence of differences in the changes of motor function and quality of life between real acupuncture and sham acupuncture for people with stroke in the convalescent stage. Twenty-nine trials compared acupuncture plus baseline treatment versus baseline treatment alone. Compared with no acupuncture, for people with stroke in the convalescent phase, acupuncture had beneficial effects on: dependency (activity of daily living) (9 trials, n=616 participants; very low quality evidence); global neurological deficiency (7 trials, n=543; low quality evidence); specific neurological impairments including motor function (4 trials, n=24; low quality evidence); cognitive function (5 trials, n=278; very low quality evidence); depression (6 trials, n=552; very low quality evidence); swallowing function (2 trials, n=200; very low quality evidence); and pain (2 trials, n=118; low quality evidence). Sickness caused by acupuncture and intolerance of pain at acupoints were reported in a few participants with stroke in the acupuncture groups.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The Cochrane review found that acupuncture may have beneficial effects on improving dependency, global neurological deficiency, and some specific neurological impairments for people with stroke in the convalescent stage, with no

obvious serious adverse events. However, most evidence was of low or very low quality and no firm conclusions can be drawn about its routine use.

The new evidence is consistent with the guideline which does not make any recommendations on acupuncture.

New evidence is unlikely to change guideline recommendations.

Vibration therapy

Three RCTs (175–177) (n=82, n=84, n=82) found no benefits for balance, walking, or motor function of: whole-body vibration plus dynamic leg exercises; low-intensity or high-intensity whole-body vibration; or exercise training plus whole-body vibration.

Intelligence gathering

No additional information was identified for this section.

Impact statement

The new evidence found no benefit of vibration therapy, which is consistent with the guideline that makes no recommendations on this therapy.

New evidence is unlikely to change guideline recommendations.

Art therapy

2018 surveillance summary

An RCT (178) (n=118) found that creative art therapy significantly improved depression, physical functions and quality of life.

Intelligence gathering

No additional information was identified for this section.

Impact statement

Although a single RCT found benefit of art therapy, further evidence confirming these results would be useful before considering any impact on the guideline, which does not currently make any recommendations on art therapy.

New evidence is unlikely to change guideline recommendations.

Pharmacological therapies

2018 surveillance summary

Intrathecal baclofen for spasticity

An RCT (n=60) 'Spasticity In Stroke-Randomised Study' (SISTERS) found that versus conventional medical management, intrathecal baclofen for patients with severe poststroke spasticity significantly reduced spasticity (179) and pain, and improved quality of life (180). Both treatment arms received physiotherapy throughout.

Botulinum toxin after/combined with other rehabilitation for spasticity

A Cochrane review (181) of 3 RCTs (n=91) examined multidisciplinary rehabilitation following botulinum toxin for post-stroke spasticity.

Four RCTs (182–185) (n=75, n=59, n=163, n=273), and 2 cost effectiveness studies (186,187) (n=not stated, n=333), also examined botulinum toxin after/combined with other rehabilitation for spasticity

However guidance in this area is covered by the in-development NICE multiple technology appraisal [ID768] of botulinum toxin type A preparations for treating upper or lower limb focal spasticity associated with stroke.

Botulinum toxin alone for spasticity

Five RCTs (188–192) (n=81, n=85, n=468, n=187, n=197) examined botulinum toxin alone for spasticity.

However guidance in this area is covered by the in-development NICE multiple technology appraisal [ID768] of botulinum toxin type A preparations for treating upper or lower limb focal spasticity associated with stroke.

Pharmacological interventions other than botulinum toxin for spasticity

A Cochrane review (193) of 7 RCTs (n=403) examined pharmacological interventions other than botulinum toxin for spasticity after stroke. Pooled data from 2 trials of systemic drugs (tizanidine and tolperisone) versus placebo showed no significant effect on an indirect measure of spasticity, and there was a significant risk of adverse events per participant in the treatment group (2 RCTs, n=160). Of the other 5 studies, 2 assessed a systemic drug versus another systemic drug, 1 assessed a systemic drug versus local drug, and the final 2 assessed a local drug versus another local drug – the abstract did not report results of these trials.

Pharmacological interventions for unilateral spatial neglect

A Cochrane review (194) of 2 studies (n=30) examined pharmacological interventions for unilateral spatial neglect after stroke. Meta-analysis was not possible because of heterogeneity between included studies. Very low-quality evidence from 1 trial (n=20) comparing effects of rivastigmine plus rehabilitation versus rehabilitation alone on overall unilateral spatial neglect at discharge showed a significant benefit of rivastigmine plus rehabilitation for the Letter Cancellation test at discharge, and a significant benefit of the rehabilitation control for the Wundt-Jastrow Area Illusion Test at discharge. There were no

significant differences between groups for the Barrage test or Sentence Reading test at discharge. No significant difference was observed for outcomes at 30 days' follow-up. The other trial (n=10) found a significant reduction in omissions in the 3 cancellation tasks under transdermal nicotine treatment compared with both baseline and placebo. One major adverse event occurred in the transdermal nicotine treatment group, and treatment was discontinued in the affected participant.

Selective serotonin reuptake inhibitors

A Cochrane review (195) of 56 RCTs examined selective serotonin reuptake inhibitors (SSRIs) for stroke recovery. Of the 56 included RCTs, 52 trials (n=4,060) provided data for meta-analysis. There were significant benefits of SSRIs for: reducing dependency at the end of treatment (1 trial); disability score (22 trials, n=1,310); neurological deficit (29 trials, n=2,011); dichotomous depression scores (8 trials, n=771); continuous depression scores (39 trials, n=2,728); and anxiety (8 trials, n=413). There was no significant benefit of SSRIs on cognition (7 trials, n=425), death (46 trials, n=3,344), motor deficits (2 trials, n=145), or leaving the trial early. SSRIs were not significantly associated with seizures (7 trials, n=444), gastrointestinal side effects (14 trials, n=902) or bleeding (2 trials, n=249). There was no clear evidence from subgroup analyses that one SSRI was consistently superior to another, or that time since stroke or depression at baseline had a major influence on effect sizes. Sensitivity analyses suggested that effect sizes were smaller when trials at high or unclear risk of bias were excluded. Only 8 trials provided data on outcomes after treatment had been completed; the effect sizes were generally in favour of SSRIs.

Two RCTs found significant benefits of: escitalopram versus placebo in preventing new onset of apathy following stroke (196) (n=154); and paroxetine (10 mg/day during week 1 and 20 mg/day thereafter) for 3 months plus conventional secondary ischemic stroke prevention and rehabilitation training versus conventional treatment alone for improving motor function and cognitive function (197) (n=167).

However another RCT (198) (n=3,127) found that fluoxetine 20 mg once daily for 6 months made no difference to disability at 6 months versus placebo, but fluoxetine was associated with significantly more bone fractures.

Other pharmacological therapies

Several RCTs of other therapies were identified:

Cerebrolysin (a neuropeptide)

Among 2 RCTs of cerebrolysin versus placebo, one (199) (n=70) found a 21-day course of cerebrolysin plus standard rehabilitation within 7 days of stroke did not benefit motor function across all patients (but did significantly improve motor function in patients with severe motor impairment), and a second (200) (n=60) found cerebrolysin 30 ml/day for 10 consecutive days, starting in the first 24–48 hours after stroke, plus early physical rehabilitation significantly improved stroke impairment, disability and

activities of daily living on day 10 and day 30.

Citicoline (an intermediate in the generation of phosphatidylcholine from choline)

An RCT (201) (n=347) found that citicoline 1 g/day for 12 months led to significantly improved attention-executive functions at 6 months and temporal orientation at 12 months versus control (no citicoline), but no difference in functional outcome at 12 months.

Dextroamphetamine (an amphetamine enantiomer)

An RCT (202) (n=64) found no difference in change in motor function in patients following either 10 mg of dextroamphetamine or placebo (both treatments were combined with a 1-hour physical therapy session beginning 1 hour after drug or placebo administration every 4 days for 6 sessions in addition to standard rehabilitation).

DI-3n-butylphthalide (an isolate from Chinese celery seeds)

An RCT (203) (n=304) found that versus placebo, DI-3n-butylphthalide 200 mg orally, 3 times daily for 21 days, significantly improved stroke impairment and activities of daily living on days 7, 14, 21, and 30.

Lithium

An RCT (204) (n=80) found that lithium 300 mg twice daily, initiated 48 hours after stroke and continued for 30 days, did not improve stroke deficit or hand function versus placebo (though subgroup analysis did show significant improvements in these outcomes for patients with cortical strokes).

Tirofiban (an antiplatelet)

An RCT (205) (n=66) found that tirofiban for 21 days in addition to standard rehabilitation led to significantly improved motor function versus placebo.

Intelligence gathering

A topic expert noted that recommendations on stem cell therapy may be needed. However no evidence in this area fulfilling the criteria of the current surveillance review was found.

It was noted that the license for intrathecal baclofen (Aguettant brand) states it is '…indicated in patients with severe chronic spasticity resulting from trauma […] who are unresponsive to oral baclofen or other orally administered antispastic agents and/or those patients who experience unacceptable side effects at effective oral doses. Baclofen Aguettant is effective in adult patients with severe chronic spasticity of cerebral origin, resulting e.g. from […] cerebrovascular accident; however, clinical experience is limited.' The license for intrathecal baclofen (Novartis brand) does not specifically state an indication for stroke.

It was also noted that tizanidine, rivastigmine, transdermal nicotine, SSRIs, tirofiban and lithium are not licensed for the indications for which they were examined by the new evidence. Additionally, cerebrolysin, citicoline, dextroamphetamine and DI-3n-butylphthalide are not licensed in the UK for any indication. Tolperisone is licensed

for treating post-stroke spasticity in adults in Europe, but not currently in the UK.

Impact statement

Intrathecal baclofen for spasticity

An RCT found that intrathecal baclofen for patients with severe poststroke spasticity reduced spasticity and pain, and improved quality of life, versus conventional medical management. Both treatment arms received physiotherapy throughout.

The new evidence may impact the guideline, which does not currently make recommendations about intrathecal baclofen.

The Royal College of Physicians Intercollegiate Stroke Working Party does make the following recommendation 'People with generalised or diffuse spasticity after stroke should be offered treatment with skeletal muscle relaxants (e.g. baclofen, tizanidine) …'

Intrathecal baclofen is indicated only in patients who are unresponsive to oral baclofen or other orally administered antispastic agents and/or those patients who experience unacceptable side effects at effective oral doses.

New evidence identified that may change guideline recommendations.

Botulinum toxin after/combined with other rehabilitation for spasticity

New evidence was found, however this area is covered by an in-development NICE technology appraisal therefore no impact on the guideline is currently expected, which makes no recommendations about adding botulinum toxin to rehabilitation.

New evidence is unlikely to change guideline recommendations.

Botulinum toxin alone for spasticity

New evidence was found, however this area is covered by an in-development NICE technology appraisal therefore no impact is currently expected on the guideline, which makes no recommendations about adding botulinum toxin to rehabilitation.

New evidence is unlikely to change guideline recommendations.

Pharmacological interventions other than botulinum toxin for spasticity

The Cochrane authors found evidence on tizanidine and tolperisone, but concluded that the lack of high-quality RCTs limited any specific conclusions. The new evidence is unlikely to affect the guideline which makes no recommendations for pharmacological treatments.

Additionally, tizandine is not licensed for use in post-stroke spasticity in the UK, and tolperisone is licensed for treating post-stroke spasticity in adults in Europe, but not currently in the UK.

New evidence is unlikely to change guideline recommendations.

Pharmacological interventions for unilateral spatial neglect

The Cochrane authors concluded that the quality of the evidence from available RCTs was very low therefore the

effectiveness and safety of pharmacological interventions for unilateral spatial neglect after stroke are uncertain, and more evidence is needed.

The new evidence is unlikely to affect the guideline which makes no recommendations for pharmacological treatments. The use of rivastigmine and transdermal nicotine for unilateral spatial neglect are also not licensed in the UK.

New evidence is unlikely to change guideline recommendations.

Selective serotonin reuptake inhibitors

The Cochrane authors concluded that SSRIs appeared to improve dependence, disability, neurological impairment, anxiety and depression after stroke, but there was heterogeneity between trials and methodological limitations in a substantial proportion of the trials. They stated that large, well-designed trials are now needed to determine whether SSRIs should be given routinely to patients with stroke.

Two individual trials also showed there to be benefit of the SSRIs escitalopram and paroxetine. However a very large RCT of over 3,000 patients found no benefit of fluoxetine on disability – given that the meta-analysis showing benefit of SSRIs for disability in the Cochrane review was based on 1,310 patients, it is possible that the RCT could have an attenuating effect if added to the pooled data.

Although there appears to be some evidence that SSRIs can have benefits in stroke, the heterogeneity and limited quality of the evidence, along with a very large RCT finding no benefit for disability, means there is unlikely to be an impact on the guideline which makes no recommendations on SSRIs. The use of SSRIs for stroke recovery is also not licensed in the UK.

However, the use of SSRIs specifically for depression in people with chronic health problems is covered by NICE guideline CG91 Depression in adults with a chronic physical health problem: recognition and management, which NICE guideline CG162 cross-refers to.

New evidence is unlikely to change guideline recommendations.

Other pharmacological therapies

Several RCTs of other therapies were identified (cerebrolysin, citicoline, dextroamphetamine, DI-3n-butylphthalide, lithium, tirofiban) which found some evidence of benefit for some treatments, but evidence on each drug was mostly from single trials and further studies confirming any effects would be needed before considering any impact on the guideline.

Additionally, tirofiban and lithium are not licensed for use for stroke recovery in the UK, and cerebrolysin, citicoline, dextroamphetamine and DI-3n-butylphthalide are not licensed in the UK for any indication.

New evidence is unlikely to change guideline recommendations.

Research recommendations

1. What is the clinical and cost effectiveness of electrical stimulation (ES) as an adjunct to rehabilitation to improve hand and arm function in people after stroke, from early rehabilitation through to use in the community?

Summary of findings

The new evidence consisted of mixed results from 8 RCTs (with some heterogeneity of the exact type and location of electrical stimulation, with different comparators, and not all benefits related to function), which is unlikely to impact the guideline recommendation not to routinely offer electrical stimulation for the hand and arm, but to consider a trial of electrical stimulation in people who have evidence of muscle contraction after stroke but cannot move their arm against resistance.

Surveillance decision

This research recommendation will be considered again at the next surveillance point.

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2. In people after stroke what is the clinical and cost effectiveness of intensive rehabilitation (6 hours per day) versus moderate rehabilitation (2 hours per day) on activity, participation and quality of life outcomes?

Summary of findings

No new evidence relevant to the research recommendation was found and no ongoing studies were identified.

Surveillance decision

This research recommendation will be considered again at the next surveillance point.

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3. Which cognitive and which emotional interventions provide better outcomes for identified subgroups of people with stroke and their families and carers at different stages of the stroke pathway?

Summary of findings

No new evidence relevant to the research recommendation was found and no ongoing studies were identified.

Surveillance decision

This research recommendation will be considered again at the next surveillance point.

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4. Which people with a weak arm after stroke are at risk of developing shoulder pain? What management strategies are effective in the prevention or management of shoulder pain of different aetiologies?

Summary of findings

The new evidence suggests that there are interventions that can reduce shoulder pain, but the trials were heterogeneous and evidence from other studies confirming effects are needed. There is unlikely to be an impact on the guideline which recommends managing shoulder pain after stroke using appropriate positioning and other treatments according to each person's need, but does not specify any particular treatments.

However, recommendations by the Royal College of Physicians Intercollegiate Stroke Working Party contain additional information not covered by NICE guideline CG162, namely on the types of patients with shoulder pain who should and should not receive intra-articular steroid injections. Use of steroids for shoulder pain warrants investigation and may potentially impact the NICE guideline.

Surveillance decision

This research recommendation will be considered again at the next surveillance point.

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