Supplementary file 1: The list of recommendations and consensus work. It indicates the percentage of agreement for each recommendation collected from national clinical guidelines for stroke. It encompasses the first and second rounds of consensus work. Additionally, it shows how these recommendations were connected to a component of the PARIHS framework.

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
Service delivery (context: expertise)	2.3.1.C Acute stroke services should provide specialist multi-disciplinary care for diagnosis, hyperacute and acute treatments, normalisation of homeostasis, early rehabilitation, prevention of complications and secondary prevention.	**88%**			√		**Context:** refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
Service delivery (context: training, education).	2.3.1.J Acute stroke services should have an education programme for all staff providing acute stroke care (including ambulance services and the emergency department as appropriate) and should provide training for healthcare professionals in the specialty of stroke.	**95%**			√		
PHS care management	2.4.1.A People with stroke should be treated on a specialist stroke unit throughout their hospital stay unless their stroke is not the predominant clinical problem.	35%	39%	…….	……	…….	
Service delivery (context: resources).	2.4.1.J A stroke rehabilitation unit should have a single multi-disciplinary team including specialists in: • medicine; • nursing; • physiotherapy; • occupational therapy; • speech and language therapy; • dietetics; • clinical neuropsychology/clinical psychology; • social work; • orthoptics; • with easy access to pharmacy, orthotics, specialist seating, assistive technology and information, advice and support for people with stroke and their family/carers.	**90%**			√		

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
Service delivery (context: resources).	2.4.1.K A facility that provides treatment for in-patients with stroke should include: • a geographically-defined unit; • a co-ordinated multi-disciplinary team that meets at least once a week for the exchange of information about in-patients with stroke; • information, advice and support for people with stroke and their family/carers; • management protocols for common problems, based upon the best available evidence; • close links and protocols for the transfer of care with other in-patient stroke services, early supported discharge teams and community services; • training for healthcare professionals in the specialty of stroke	**100%**			√		**Context**: refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
PHS care management	2.6.1. C: Organisations and teams regularly involved in caring for people with stroke should use a common, agreed terminology and set of data collection measures, assessments and documentation.	65%	**87%**	√			
Secondary prevention Education (patient education, family/carer education).	2.7.1.I People with stroke who are dependent in personal activities (e.g. dressing, toileting) should be offered a transition package before being transferred home that includes: • visits/leave at home prior to the final transfer of care; • training and education for their carers specific to their needs; • telephone advice and support for three months.	70%	**80%**		√		
Service delivery (patient factors: consistency of treatment in clinical and non-clinical settings.)	2.7.1.J Before the transfer of care for a person with stroke from hospital to home (including a care home) they should be provided with • a named point of contact for information and advice; • written information about their diagnosis, medication and management plan.	66%	**77%**			√	
Service delivery	2.8.1. A Clinicians providing care for people with stroke should participate in national stroke audit to enable comparison of the clinical and organisational quality of their services, and use the findings to plan and deliver service improvements.	55%	**53%**	…….	…….	…….	

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
Service delivery Context (team working+ leadership opinion).	2.8.1.B Services for people with stroke should take responsibility for all aspects of service quality by: • providing practical support and multi-disciplinary leadership to the process of clinical audit. participating actively in regional and national quality improvement initiatives such as Clinical Networks.	69%	**83%**		√		**Context:** refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
PHS care management (prerequisites for treatment)	2.8.1.D The views of people with stroke and their family/carers should be actively sought when evaluating service quality and safety, and when planning service developments.	**91%**		√			
PHS care management (prerequisites for treatment).	2.8.1.E People with stroke and their family/carers should be offered any practical support necessary to enable participation in service user consultations.	**94%**				√	
Assessment : Tailoring of assessment	2.9.1.A Assessment measures used in stroke rehabilitation should meet the following criteria as far as possible: • they should collect relevant data across the required range (i.e. they are valid and fulfil a need); • they should have sufficient sensitivity to detect change within a person and differences between people; • their reliability should be known when used by different people on different occasions and in different settings; • they should be simple to use under a variety of circumstances; – they should provide scores that are easily understood.	**90%**		√			
Service delivery (context)	2.9.1.B A stroke service should agree on a standard set of assessment measures that should be collected and recorded routinely.	**79%**			√		
Assessment.	2.9.1.C. A stroke service should have protocols for determining the routine collection and use of data that: • specify the reason for and proposed use of each assessment measure; • provide individual clinicians with a choice of assessment measures where no measure is obviously superior; • review the utility of each assessment measure regularly.	**83%**			√		

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
Service delivery (Context: training, experience). Assessment.	2.9.1.D. A stroke service should have protocols for the use of more complex assessment measures, describing: – • when it is appropriate or necessary to consider their use; which assessment measure(s) should be used; what specific training or experience is needed to use the assessment measure(s).	**82%**			√		**Context:** refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
PHS care management Goal setting	2-10-1-A People with stroke should be actively involved in their rehabilitation through: – • having their feelings, wishes and expectations for recovery understood and acknowledged; • participating in the process of goal setting unless they choose not to, or are unable to because of the severity of their cognitive or linguistic impairments; • being given help to understand the process of goal setting, and to define and articulate their personal goals.	**87%**		√			
PHS care management Goal setting	2-10-1-B People with stroke should be helped to identify goals that: – are meaningful and relevant to them; – are challenging but achievable; • aim to achieve both short-term (days/weeks) and longterm (weeks/months) objectives; • are documented, with specific, time-bound and measurable outcomes; • have achievement measured and evaluated in a consistent way; • include family/carers where this is appropriate; – are used to guide and inform therapy and treatment.	**79%**		√			
PHS care management Goal setting.	• 2-10-1- C: People with stroke should be supported and involved in a self-management approach to their rehabilitation goals	**85%**		√			
PHS care management	2.11.1.A A People with stroke should accumulate at least 45 minutes of each appropriate therapy every day, at a frequency that enables them to meet their rehabilitation goals, and for as long as they are willing and capable of participating and showing measurable benefit from treatment.	70%	**75%**	√			
PHS care management (tailoring of treatment)	2.11.1.B In the first two weeks after stroke, therapy targeted at the recovery of mobility should consist of frequent, short interventions every day, typically beginning between 24 and 48 hours after stroke onset.	**79%**		√			

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
Service delivery (team working)	2.11.1.C Multi-disciplinary stroke teams should incorporate the practicing of functional skills gained in therapy into the person's daily routine in a consistent manner, and the care environment should support people with stroke to practice their activities as much as possible.	**87%**			√		**Context:** refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
PHS care management (monitoring/oversight)	2.11.1.D Healthcare staff who support people with stroke to practice their activities should do so under the guidance of a qualified therapist	**100%**		√			
Service delivery	2.12.1.A Services for people with stroke should offer psychological support to all patients regardless of whether they exhibit specific mental health or cognitive difficulties, and use a matched care model to select the level of support appropriate to the person's needs.	45%	40%	…….	……	…….	
Service delivery (context: training)	2.12.1.C Services for people with stroke should provide training to ensure that clinical staff have an awareness of psychological problems following stroke and the skills to manage them.	68%	**77%**		√		
PHS care management	2.12.1.E Services for people with stroke should provide screening for mood and cognitive disturbance within six weeks of stroke (in the acute phase of rehabilitation and at the transfer of care into post-acute services) and at six and 12 months using validated tools and observations over time.	59%	69%	…….	……	…….	
Assessment	2.13.1.B People with stroke whose motivation and engagement in rehabilitation appears reduced should be assessed for changes in self-esteem, self-efficacy or identity and mood.	**55%**	**68%**	…….	……..	…….	
Service delivery Patient factor: family/carier support)	2.16.1. A: The views of the person with stroke should be sought, to establish the extent to which they wish carers and others to be involved in the planning and delivery of their care.	**98%**				√	
Service delivery Patient factor: family/carier support)	2.16.1. B: If the person with stroke agrees, family/carers should be involved in significant decisions as an additional source of information about the person both clinically and socially.	**93%**				√	

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
Secondary prevention Education (family/carer education).	2.16.1. C The primary carer(s) of a person with stroke should be offered an educational programme which: – explains the nature, consequences and prognosis of stroke and what to do in the event of a further stroke or other problems e.g. poststroke epilepsy; – teaches them how to provide care and support; – gives them opportunities to practise giving care; – provides advice on secondary prevention, including lifestyle changes	**93%**				√	**Context:** refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
Service delivery	2.16.1. D When care is transferred out of hospital to the home or care home setting, the carer of a person with stroke should be offered: – an assessment of their own needs, separate to those of the person with stroke; – the practical or emotional support identified as necessary; – guidance on how to seek help if problems develop.	**29%**	**32%**	…….	……	…….	
PHS care management	3.11.1. A Patients with acute stroke should have an initial specialist assessment for positioning as soon as possible and within 4 hours of arrival at hospital.	62%	**79%**		√		
Secondary prevention (positioning).	3.11.1.B Healthcare professionals responsible for the initial assessment of patients with acute stroke should be trained in how to position patients appropriately, taking into account the degree of their physical impairment after stroke.	**88%**				√	
Secondary prevention (positioning)	3.11.1.C When lying or sitting, patients with acute stroke should be positioned to minimise the risk of aspiration and other respiratory complications, shoulder pain and subluxation, contractures and skin pressure ulceration.	**94%**		√			
Assessment (tailoring of assessment)	3.12.1.A Patients with difficulty moving after stroke should be assessed as soon as possible within the first 24 hours of onset by an appropriately trained healthcare professional to determine the most appropriate and safe methods of transfer and mobilisation.	**90%**			√		
PHS care management	3.12.1.B Patients with difficulty moving early after stroke who are medically stable should be offered frequent, short daily mobilisations (sitting out of bed, standing or walking) by appropriately trained staff with access to appropriate equipment, typically beginning between 24 and 48 hours of stroke onset. Mobilisation within 24 hours of onset should only be for patients who require little or no assistance to mobilise.	69%	**71%**	…….	…….	…….	

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
Assessment Service delivery (personal factprs: specialization).	4.1.1.1.A People with stroke should be formally assessed for their safety and independence in all relevant personal activities of daily living by a clinician with the appropriate expertise, and the findings should be recorded using a standardised assessment tool.	**79%**			√		**Context:** refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
Service delivery(patient factors: family/carier support+ consistency of treatment)	4.1.1.1.C People with stroke should be offered, as needed, specific treatments that include: • As many opportunities as appropriate to practice selfcare; • Training of family/carers in how to help the person with stroke.	**85%**				√	
PHS care management	4.1.4.1.C Vocational rehabilitation programmes for people after stroke should include: interventions specifically designed for the individual which may include: vocational counselling and coaching, emotional support, adaptation of the working environment, strategies to compensate for functional limitations in mobility and arm function, and fatigue management.	29%	37%	…….	…….	…….	
PHS management (repetition of treatment + tailoring of tratment)	4.2.1.A People with stroke with potential or actual arm movement should be given every opportunity to practice functional activities. Practice should be characterised by movements that are of high intensity, repetitive and are taskspecific. These activities may be bilateral or unilateral depending on the task.	**90%**		√			
PHS management (motivation patient)	4.2.1.B People with stroke who have 20 degrees of active wrist extension and 10 degrees of active finger extension in the affected hand should be considered for constraint-induced movement therapy	**87%**		√			
PHS management (electrical stimulation + tailoring of treatment)	4.2.1.D People with reduced arm function after a stroke should only be offered robot-assisted movement therapy or neuromuscular electrical stimulation as an adjunct to conventional therapy in the context of a clinical trial.	**81%**		√			

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
Secondary prevention (patient education)	4.2.1.E People without movement in the affected arm after a stroke should be trained in how to care for their affected arm and monitored for any change.	**100%**				√	**Context:** refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
Assessment	4.3.1.1.A People with stroke should be considered to have at least some cognitive impairment in the early phase. Routine screening should be undertaken to identify the person's level of functioning, using standardised measures.	**77%**		√			
Assessment Service delivery (family/carer support)	4.3.1.1.B Any person with stroke who is not progressing as expected in rehabilitation should receive a detailed assessment to determine whether cognitive impairments are responsible, with the results explained to the person, their family and the multidisciplinary team.	73%	**75%**			√	
Assessment	4.3.1.1.C People with communication impairment after stroke should receive a cognitive assessment using valid assessments in conjunction with a speech and language therapist. Specialist advice should be sought if there is uncertainty about the interpretation of cognitive test results.	63%	59%	…….	…….	…….	
Secondary prevention (education: patient, family and carer education).	4.3.3.1.C People with impaired attention after stroke should: • have the impairment explained to them, their family/carers and the multidisciplinary team; • be offered an attentional intervention (e.g. time pressure management, attention process training, environmental manipulation), ideally in the context of a clinical trial; • be given as many opportunities to practise their activities as reasonable under supervision	**79%**				√	
Assessment	4.3.2.1.A: People with difficulty executing tasks after stroke despite adequate limb movement should be assessed for the presence of apraxia using standardised measures.	**82%**		√			
Secondary prevention (education: patient, family and carer education)	4.3.2.1.B: People with apraxia after stroke should: • have the impairment and the impact on function explained to them, their family/carers, and the multidisciplinary team.	**84%**				√	

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
Service delivery (family/carer support)	4.3.5.1.B: People with memory impairment after stroke causing difficulties with rehabilitation should: have the impairment explained to them, their family/carers and the multidisciplinary team.	**79%**				√	**Context:** refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
Secondary prevention (education: patient, family and carier education)	4.3.7.1.C People with impaired awareness to one side after stroke should: have the impairment explained to them, their family/carers and the multidisciplinary team;	**88%**				√	
Assessment	4.6.1.A: People with stroke who are medically stable but who report fatigue should be offered an assessment for mental and physical factors that may be contributing, particularly when engagement with rehabilitation or quality of life is affected.	57%	61%	…….	…….	…….	
Assessment Secondary prevention patient, family and carers education.	4.9.1.1. A People with stroke should be assessed for motor impairment and/or ataxia using a standardised approach, and have the impairment explained to them, their family/carers and the multidisciplinary team.	**79%**		√			
Assessment + service deliver (personal factors: specialization).	4.9.1.1.B People with loss of movement and/or ataxia after stroke sufficient to limit their activities should be assessed by a physiotherapist with experience in neurological rehabilitation	**98%**				√	
PHS care management	4.9.1.1.C People with loss of movement and/or ataxia after stroke should be taught task-specific, repetitive, intensive exercises or activities that will increase strength.	**83%**				√	
Assessment	4.10.1.1.A People with stroke with one mood disorder (e.g. depression) should be assessed for others (e.g. anxiety).	55%	60%	…….	…….	…….	
Secondary prevention (education: patient, family and carers) + prohibited activities (handling and positiong).	4.12.2.1.A People with musculoskeletal pain after stroke should be assessed to ensure that movement, posture and moving and handling techniques are optimised to reduce pain.	**95%**		√			
PHS care management (electrical stimulation+injections)	4.12.2.1.B People who continue to experience musculoskeletal pain should be offered pharmacological treatment with simple analgesic drugs. Paracetamol, topical non-steroidal anti-inflammatory drugs (NSAIDs) or transcutaneous electrical nerve stimulation (TENS) should be offered before considering the addition of opioid analgesics.	**79%**		√			

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
Secondary prevention (patient, family and carer education).	4.12.3.1.A People with functional loss in their arm after stroke should have the risk of shoulder pain reduced by: • careful positioning of the arm, with the weight of the limb supported; • ensuring that family/carers handle the affected arm correctly, avoiding mechanical stress and excessive range of movement; • avoiding the use of overhead arm slings and pulleys.	**100%**		√			**Context:** refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
Assessment	4.12.3.1.B People with arm weakness after stroke should be asked regularly about shoulder pain.	**97%**		√			
Assessment	4.12.3.1.C People who develop shoulder pain after stroke should: • have the severity monitored and recorded regularly, using a validated pain assessment tool; • have preventative measures put in place; • be offered regular simple analgesia	**87%**		√			
PHS care management	4.12.3.1.D People with shoulder pain after stroke should only be offered intra-articular steroid injections if they also have inflammatory arthritis.	**83%**		√			
Assessment	4.15.1.A People with motor weakness after stroke should be assessed for spasticity as a cause of pain, as a factor limiting activities or care, and as a risk factor for the development of contractures.	**79%**		√			
Assessment	4.15.1.B People with stroke should be supported to set and monitor specific goals for interventions for spasticity using appropriate clinical measures for ease of care, pain and/or range of movement.	**86%**		√			
Assessment	4.15.1.C People with spasticity after stroke should be monitored to determine the extent of the problem and the effect of simple measures to reduce spasticity e.g. positioning, passive movement, active movement (with monitoring of the range of movement and alteration in function) and/or pain control.	**89%**		√			
PHS care management (tailoring of treatment).	4.15.1.G People with stroke with increased tone that is reducing passive or active movement around a joint should have the range of passive joint movement assessed. They should only be offered splinting or casting following individualised assessment and with monitoring by appropriately skilled staff.	**90%**		√			

Category/sub-category	Evidence (Royal college of physician: National clinical guidelines for stroke. 2016).	Consensus work		PARIHS framework			Support information
		1st round voting	2ed round voting	Evidence	Context	Facilitation	
PHS care management	4.15.1.H People with stroke should not be routinely offered splinting for the arm and hand.	**82%**					**Context:** refers to the environment in which the modification takes place (sub-elements includes: culture, leadership and evaluation). **Facilitation:** refers to the transformation process that is customized to each individual's unique criteria for implementing the evidence (such as appropriate skills and knowledge to help individual, teams and organization apply evidence in practice).
Service delivery (context: training, education).	4.18 Identify staff training needs and provide these as required, paying particular attention to areas where staff feel less confident e.g. sex, vocational rehabilitation, continence, fatigue, cognition.	**91%**				√	
PHS care management (prerequisites for treatment : goals of therapy)	4.18 Ensure that rehabilitation is person-centred, promoting awareness that interventions should be offered in accordance with the expressed wishes of the person with stroke, or in their best interests if they lack mental capacity.	**79%**		√			
Service delivery (context: team working).	4.18 Ensure that specialist multidisciplinary teams liaise effectively with other primary care services and social care.	**83%**			√		
Service delivery: context: knowledge sharing; patient factors: family/carers support).	4.18 Develop clear protocols for involving family/carers, where appropriate, in information-sharing and decision making and for meeting statutory requirements for identifying carers' own needs.	**78%**			√		
Service delivery	6.1.1.A Commissioning organisations should ensure that their commissioning portfolio includes the whole stroke pathway from prevention (including neurovascular services) through acute care, early rehabilitation, secondary prevention, early supported discharge, community rehabilitation, systematic follow-up, palliative care and long-term support.	**89%**			√		
Service delivery Context	6.1.1.B Stroke services should be commissioned based upon an estimate of the needs of the population served, and derived from the best available evidence locally and nationally.	**81%**			√		
Service delivery Context, personal factors.	6.1.1.E Commissioners should require that all those caring for people with stroke have the knowledge, skills and attitudes to provide safe, compassionate and effective care, especially for vulnerable people with restricted mobility, sensory loss, impaired communication and cognition and neuropsychological problems.	**86%**				√	