VA/DoD Clinical Practice Guidelines

Management of Stroke Rehabilitation

Provider Summary

Version 5.0 | 2024

VA/DoD CLINICAL PRACTICE GUIDELINE FOR MANAGEMENT OF STROKE REHABILITATION

Department of Veterans Affairs

Department of Defense

Provider Summary

QUALIFYING STATEMENTS

The Department of Veterans Affairs (VA) and the Department of Defense (DoD) guidelines are based on the best information available at the time of publication. The guidelines are designed to provide information and assist decision making. They are not intended to define a standard of care and should not be construed as one. Neither should they be interpreted as prescribing an exclusive course of management.

This clinical practice guideline (CPG) is based on a systematic review of both clinical and epidemiological evidence. Developed by a panel of multidisciplinary experts, it provides a clear explanation of the logical relationships between various care options and health outcomes while rating both the quality of the evidence and the strength of the recommendation.

Variations in practice will inevitably and appropriately occur when providers consider the needs of individual patients, available resources, and limitations unique to an institution or type of practice. Therefore, every health care professional using these guidelines is responsible for evaluating the appropriateness of applying them in the setting of any particular clinical situation with a patient-centered approach.

These guidelines are not intended to represent VA or DoD policies. Further, inclusion of recommendations for specific testing, therapeutic interventions, or both within these guidelines does not guarantee coverage of civilian sector care.

Version 5.0 – May 2024

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Introduction

The VA and DoD Evidence-Based Practice Work Group (EBPWG) was established and first chartered in 2004, with a mission to advise the VA/DoD Health Executive Committee "on the use of clinical and epidemiological evidence to improve the health of the population . . ." across the Veterans Health Administration (VHA) and Defense Health Agency (DHA), by facilitating the development of CPG for the VA and DoD populations.(1) Development and update of VA/DoD CPGs is funded by VA Evidence Based Practice, Office of Quality and Patient Safety. The system-wide goal of evidence-based CPGs is to improve patient health and wellbeing.

In 2019, VA and DoD published a CPG for Stroke Rehabilitation (2019 VA/DoD Stroke Rehabilitation CPG), which was based on evidence reviewed through July 5, 2018. Since the release of that CPG, the evidence base on stroke rehabilitation has expanded. Consequently, the EBPWG initiated the update of the 2019 VA/DoD Stroke Rehabilitation CPG in 2022. This updated CPG's use of Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach reflects a more rigorous application of the methodology than previous iterations.(2) Therefore, the strength of some recommendations might have been modified because of the confidence in the quality of the supporting evidence (see Evidence Quality and Recommendation Strength in the full text version of the Stroke Rehabilitation CPG).

This CPG provides an evidence-based framework for evaluating and managing care for adult patients, 18 years or older, who have experienced a stroke toward improving clinical outcomes. Successful implementation of this CPG will

- Assess the patient's condition and collaborate with the patient, family, and caregivers to determine optimal management of patient care;
- Emphasize the use of patient-centered care and shared decision making;
- Minimize preventable complications and morbidity; and
- Optimize individual health outcomes and quality of life (QoL).

The full VA/DoD Stroke Rehabilitation CPG, as well as additional toolkit materials including a pocket card and provider summary, can be found at: https://www.healthquality.va.gov/index.asp.

Recommendations

The evidence-based clinical practice recommendations listed in Table 1 were developed using a systematic approach considering four domains as per the GRADE approach (see Summary of Guideline Development Methodology in the full text version of the Stroke Rehabilitation CPG). These domains include confidence in the quality of the evidence, balance of desirable and undesirable outcomes (i.e., benefits and harms), patient values and preferences, and other implications (e.g., resource use, equity, acceptability).

Table 1. Evidence-based Clinical Practice Recommendations with Strength and Category

Topic	Sub-topic	#	Recommendation	Strength[a]	Category[b]
Transitions to Community		1.	We suggest using case management services at time of discharge from the acute care hospital or post-acute care facility to improve activities of daily living and functional independence.	Weak for	Reviewed, New-added
		2.	We suggest the following interventions for patients and their caregivers • Behavioral health/psychosocial interventions to improve patient and caregiver depression • Psychoeducation to improve family function, patient functional independence, and quality of life	Weak for	Reviewed, New-added
		3.	There is insufficient evidence to recommend for or against implementing transitional care rehabilitation interventions (e.g., home-based services after hospital discharge) or early supported discharge to improve activities of daily living or functional disability following stroke.	Neither for nor against	Reviewed, New-replaced
		4.	There is insufficient evidence to recommend for or against community participation interventions to improve community engagement for survivors of stroke.	Neither for nor against	Reviewed, New-added
Motor Therapy	*General*	5.	We recommend task-specific practice (also known as task-oriented practice or repetitive task practice) to improve motor function, gait, posture, and activities of daily living.	Strong for	Reviewed, Not changed
		6.	We suggest mirror therapy to improve motor outcomes and activities of daily living.	Weak for	Reviewed, New-replaced
		7.	We suggest mirror therapy to improve unilateral spatial neglect.	Weak for	Reviewed, New-added
		8.	There is insufficient evidence to recommend for or against body-weight support treadmill training to improve motor outcomes.	Weak for	Reviewed, New-replaced
		9.	We suggest rhythmic auditory stimulation as an adjunct intervention to improve motor outcomes.	Weak for	Reviewed, New-replaced
		10.	There is insufficient evidence to recommend for or against the use of high intensity interval training over moderate intensity continuous training to enhance gait recovery.	Neither for nor against	Reviewed, New-replaced
		11.	There is insufficient evidence to recommend for or against constraint-induced movement therapy to improve upper extremity motor outcomes for individuals with some movement in the paretic limb.	Neither for nor against	Reviewed, New-replaced
		12.	There is insufficient evidence to recommend for or against selective serotonin reuptake inhibitors to improve motor outcomes in patients with or without depression.	Neither for nor against	Reviewed, New-replaced
		13.	There is insufficient evidence to recommend for or against aquatic therapy, as compared to land-based therapy, to improve mobility, balance, and activities of daily living.	Neither for nor against	Reviewed, New-added

Topic	Sub-topic	#	Recommendation	Strength[a]	Category[b]
Motor Therapy (cont.)	General (cont.)	14.	There is insufficient evidence to recommend for or against biofeedback as an adjunct intervention to improve motor outcomes.	Neither for nor against	Reviewed, New-added
		15.	There is insufficient evidence to recommend for or against motor imagery to improve motor function.	Neither for nor against	Reviewed, New-added
		16.	There is insufficient evidence to recommend for or against acupuncture to improve motor function.	Neither for nor against	Reviewed, New-added
	Technology Assisted Physical Rehabilitation	17.	We suggest neuromuscular electrical stimulation to improve motor outcomes.	Weak for	Reviewed, New-replaced
		18.	There is insufficient evidence to recommend for or against robot-assisted therapy to improve upper or lower extremity motor outcomes.	Neither for nor against	Reviewed, New-added
		19.	There is insufficient evidence to recommend for or against virtual reality to improve balance or enhance gait recovery.	Neither for nor against	Reviewed, New-replaced
		20.	There is insufficient evidence to recommend for or against the use of virtual reality/serious gaming for improving upper extremity motor outcomes, activities of daily living or quality of life.	Neither for nor against	Reviewed, New-added
		21.	There is insufficient evidence to recommend for or against contralaterally controlled functional electrical stimulation to improve upper extremity motor outcomes and activities of daily living.	Neither for nor against	Reviewed, New-added
		22.	There is insufficient evidence to recommend for or against non-invasive brain-computer interface to improve upper extremity motor outcomes and activities of daily living.	Neither for nor against	Reviewed, New-added
		23.	There is insufficient evidence to recommend for or against vagus nerve stimulation as an adjunct intervention for rehabilitation of acute and chronic motor deficits.	Neither for nor against	Reviewed, New-added
	Spasticity	24.	We suggest botulinum toxin for patients with focal spasticity depending on patient characteristics and preferences.	Weak for	Reviewed, New-replaced
		25.	There is insufficient evidence to recommend for or against the use of acupuncture or dry needling for spasticity management.	Neither for nor against	Reviewed, New-added
		26.	There is insufficient evidence to recommend for or against whole body or localized muscle vibration for spasticity management.	Neither for nor against	Reviewed, New-added
		27.	There is insufficient evidence to recommend for or against extracorporeal shock wave therapy for spasticity management.	Neither for nor against	Reviewed, New-added

Topic	Sub-topic	#	Recommendation	Strength[a]	Category[b]
Dysphagia, Cognition, and Aphasia	*Dysphagia*	28.	We suggest chin tuck against resistance exercises for patients with dysphagia.	Weak for	Reviewed, New-replaced
		29.	We suggest respiratory muscle strength training for dysphagia in patients without a tracheostomy.	Weak for	Reviewed, New-replaced
		30.	There is insufficient evidence to recommend for or against tongue pressure resistance training for dysphagia.	Neither for nor against	Reviewed, New-replaced
		31.	There is insufficient evidence to recommend for or against neuromuscular electrical stimulation and pharyngeal electrical stimulation for dysphagia.	Neither for nor against	Reviewed, New-replaced
		32.	There is insufficient evidence to recommend for or against surface electromyography for dysphagia.	Neither for nor against	Reviewed, New-added
	Cognition	33.	There is insufficient evidence to recommend for or against the use of selective serotonin reuptake inhibitors to improve cognitive outcomes.	Neither for nor against	Reviewed, New-replaced
		34.	There is insufficient evidence to recommend for or against computer assisted cognitive rehabilitation to improve cognitive outcomes.	Neither for nor against	Reviewed, New-added
	Aphasia	35.	There is insufficient evidence to recommend for or against a specific intensity of language therapy for aphasia.	Neither for nor against	Reviewed, Amended
	Spatial Neglect Therapy	36.	There is insufficient evidence to recommend for or against hemifield eye patching in addition to traditional therapy to improve functional outcomes in patients with unilateral spatial neglect.	Neither for nor against	Reviewed, New-added
		37.	There is insufficient evidence to recommend for or against the use of prism adaptation therapy for patients with unilateral spatial neglect.	Neither for nor against	Reviewed, Amended
Mental Health	*Prevention of Depression*	38.	There is insufficient evidence to recommend for or against solution-focused psychological interventions (e.g., motivational interviewing, problem-solving therapy) to prevent the development of depression.	Neither for nor against	Reviewed, New-added
		39.	We suggest against the use of anti-depressants for the prevention of post-stroke depression.	Weak against	Reviewed, New-replaced

Topic	Sub-topic	#	Recommendation	Strength[a]	Category[b]
Mental Health (cont.)	*Treatment of Depression*	40.	We suggest a selective serotonin reuptake inhibitor or a serotonin norepinephrine reuptake inhibitor for depression symptoms.	Weak for	Reviewed, Amended
		41.	We suggest psychotherapy (e.g., cognitive behavioral therapy) for depression following stroke.	Weak for	Reviewed, New-replaced
		42.	We suggest mindfulness-based therapies for treatment of depression following stroke.	Weak for	Reviewed, New-added
		43.	There is insufficient evidence to recommend for or against acupuncture, either alone or as an adjunct to pharmacotherapy, for depression following stroke.	Neither for nor against	Reviewed, New-added
Telehealth		44.	We suggest face-to-face therapy or telerehabilitation, depending on patient characteristics and preferences.	Weak for	Reviewed, New-added
		45.	There is insufficient evidence to recommend for or against the use of telerehabilitation and technology-based interventions to improve stroke-related dysphagia or aphasia outcomes or both.	Neither for nor against	Reviewed, New-added
		46.	There is insufficient evidence to recommend for or against technology-based caregiver support/education interventions to improve caregiver quality of life.	Neither for nor against	Reviewed, New-added
Non-invasive Brain Stimulation		47.	There is insufficient evidence to recommend for or against non-invasive brain stimulation (e.g., repetitive transcranial magnetic stimulation, transcranial direct current stimulation, and continuous theta burst stimulation) for patients in stroke rehabilitation.	Neither for nor against	Reviewed, New-replaced

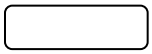
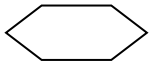
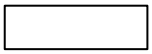
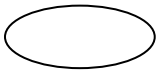
[a] For additional information, see Determining Recommendation Strength and Direction in the full text version of the Stroke Rehabilitation CPG.
[b] For additional information, see Recommendation Categorization in the full text version of the Stroke Rehabilitation CPG.

Algorithm

This CPG's algorithm is designed to facilitate understanding of the clinical pathway and decision-making process used in managing the rehabilitation of stroke patients. This algorithm format represents a simplified flow of the management of patient's post-stroke and helps foster efficient decision making by providers. It includes

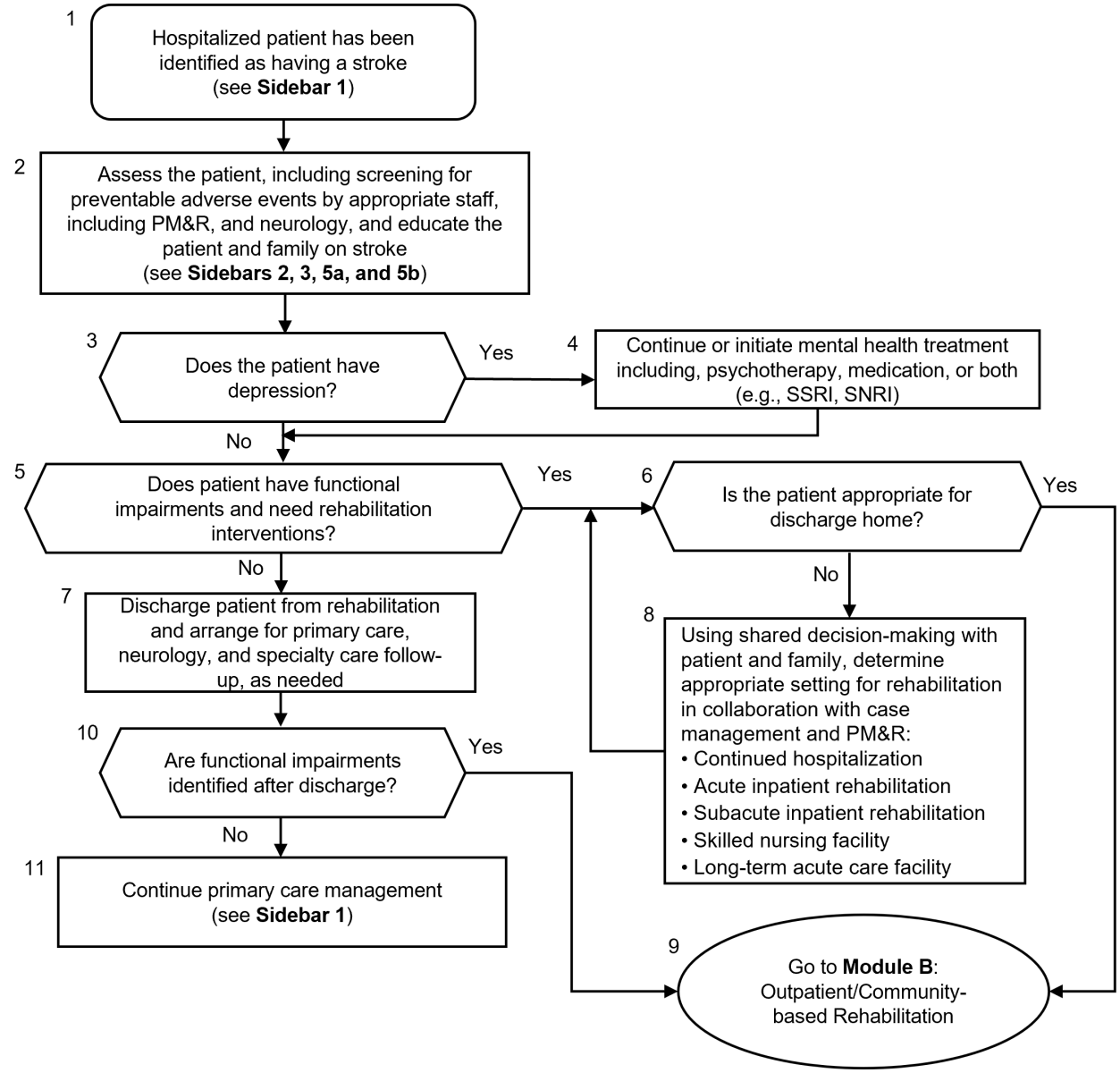
- Steps of care in an ordered sequence,
- Decisions to be considered,
- Decision criteria recommended, and
- Actions to be taken.

The algorithm is a step-by-step decision tree. Standardized symbols display each step, and arrows connect the numbered boxes indicating the order in which the steps should be followed.(3) Sidebars 1–5 provide more detailed information to assist in defining and interpreting elements in the boxes.

Shape	Description
	Rounded rectangles represent a clinical state or condition.
	Hexagons represent a decision point in the process of care, formulated as a question that can be answered "Yes" or "No."
	Rectangles represent an action in the process of care.
	Ovals represent a link to another section within the algorithm.

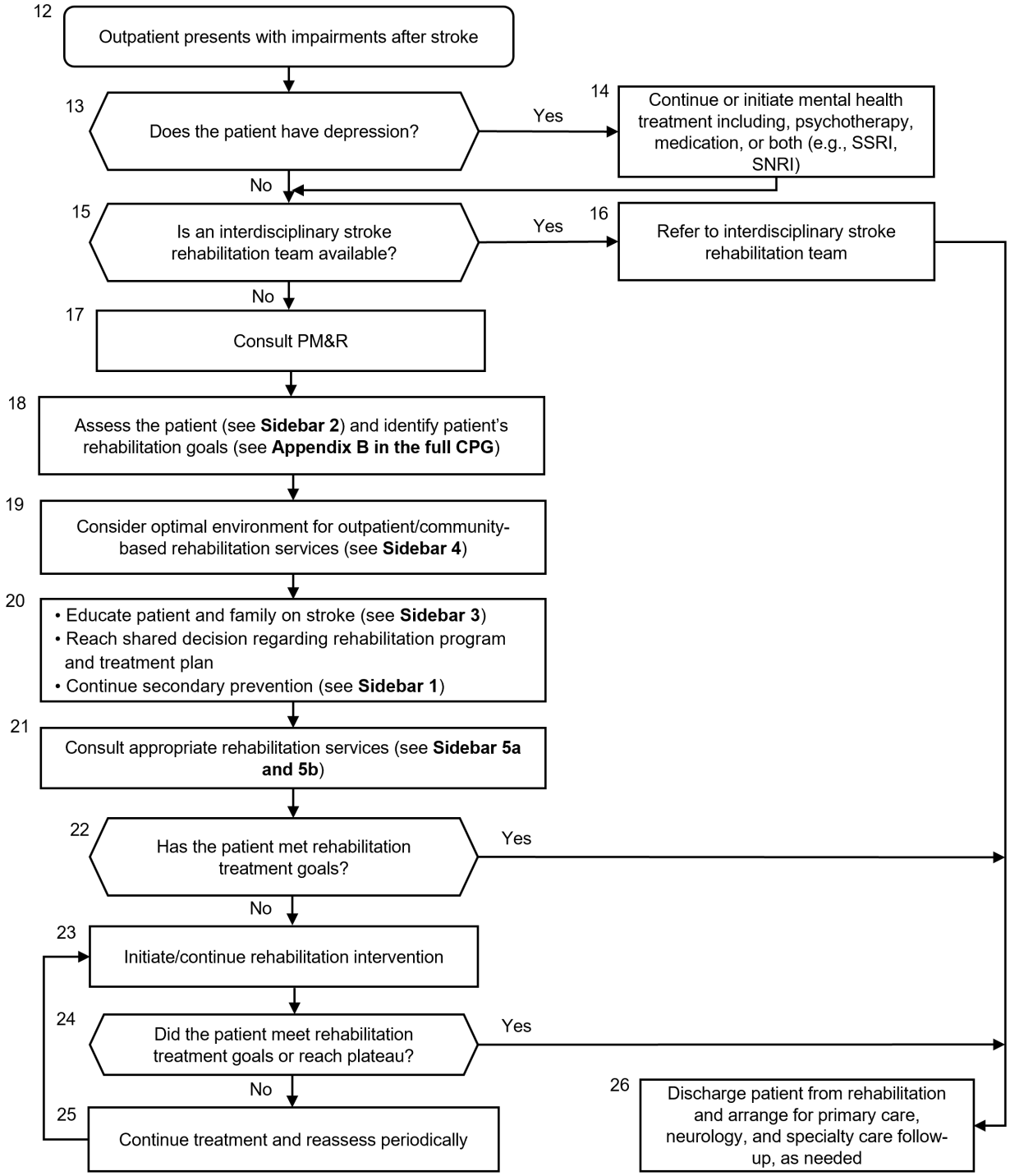
Appendix J in the full text version of the Stroke Rehabilitation CPG contains alternative text descriptions of the algorithms.

Module A: Rehabilitation Disposition of the Inpatient with Stroke



Abbreviations: PM&R = Physical medicine and rehabilitation; SSRI = Selective serotonin reuptake inhibitor; SNRI = Serotonin–norepinephrine reuptake inhibitor

Module B: Outpatient/Community-Based Rehabilitation



Abbreviations: PM&R = Physical medicine and rehabilitation; SSRI = Selective serotonin reuptake inhibitor; SNRI = Serotonin–norepinephrine reuptake inhibitor

Sidebar 1: Essential Guidelines for the Medical Management of Stroke

- 2019 Update to the 2018 AHA/ASA Guidelines for the Early Management of Patients with Acute Ischemic Stroke(4)
- 2021 AHA/ASA Guidelines for the Prevention of Stroke in Patients with Stroke and Transient Ischemic Attack(5)
- 2022 AHA/ASA Guidelines for the Management of Spontaneous Intracerebral Hemorrhage(6)

Abbreviations: AHA: American Heart Association; ASA: American Stroke Association

Sidebar 2: Assessment of Impairments and Disabilities

- Assessment of impairments
  - Auditory/hearing
  - Bowel and bladder
  - Cognition
  - Communication
  - Emotion and behavior
  - Exercise tolerance/aerobic capacity
  - Inattention/neglect
  - Motor/mobility/balance
  - Swallowing and nutrition
  - Tactile/touch/somatosensory
  - Vision and formal visual fields
  - Vestibular
- Assessment of barriers to participation in therapy
  - Cognitive impairment
  - Communication impairment
  - Fatigue and sleep
  - Medical conditions
  - Mental health (e.g., depression)
  - Motivation
  - Pain
  - Social determinants of health (e.g., financial, employment, transportation)
- Assessment of activity and function
  - ADLs (e.g., feeding, dressing, grooming) and IADLs (e.g., finances, shopping)
  - Driving
  - Meaningful roles (e.g., parent, spouse)
  - Return to work/duty or school
  - Sexual function and intimacy
- Assessment of support system
  - Family, caregivers, community
  - Military leadership/structure, if applicable

Abbreviations: ADLs: activities of daily living; IADLs: instrumental activities of daily living

Sidebar 3: Stroke Education Topics

- Stroke signs and symptoms – BE FAST
  - Balance – Sudden difficulty with balance or coordination, dizziness, vertigo
  - Eyes – Sudden blurred, double, or loss of vision in one or both eyes
  - Face – Sudden facial droop/weakness on one side
  - Arm – Sudden weakness in one arm
  - Speech – Slurred speech, inability to speak, or difficulty understanding speech
  - Time – If any of these symptoms occur, call 911. Time is critical for stroke.
- Common causes of stroke
  - Ischemic stroke (80–90% of all strokes)
    - Heart conditions, such as atrial fibrillation
    - Atherosclerosis of the large arteries in the neck and brain
    - Small vessel disease
    - ~30% of ischemic strokes are not found to have a clear cause (cryptogenic)
  - Hemorrhagic stroke (10-20% of all strokes)
    - High blood pressure (hypertension)
    - Vascular malformations (aneurysm, cavernous malformation, fistula)
    - Amyloid angiopathy
- Risk factors for stroke
  - High blood pressure (hypertension)
  - High blood sugar (diabetes mellitus)
  - High cholesterol (hyperlipidemia)
  - Heart conditions (atrial fibrillation, heart failure)
  - Tobacco/nicotine (smoking, vaping, chewing)
  - History of previous stroke
  - Age, ethnicity, gender/sex, race, socioeconomic status
- Nutrition
- Physical activity and falls prevention
- Continuum of care options/follow-up after discharge
- Inpatient rehabilitation
- Outpatient rehabilitation
- Therapy at home
- Adjustment and coping after stroke
- Primary care follow-up

Sidebar 4: Considerations for Outpatient/Community-based Rehabilitation Services
• Current functional status and endurance level • Family/caregiver support • Home assessment for safety • Motivation and preferences • Necessary equipment • Resources, availability, and eligibility • Transportation

Sidebar 5a: Resources for Management of Post-Stroke Impairments/Needs[1]		
Consultants/Referrals	**Impairment/Need**	
Behavioral and mental health	• Adjustment and coping • Behavioral smoking cessation • Cognition • Emotion and behavior	• Family and caregiver support • Pain • Sexual function and intimacy
Case management (social work, nursing, or both)	• Community resources • Emotion and behavior • Family and caregiver support	• Financial resources • Risk for abuse and neglect (e.g., emotional, financial exploitation, physical)
Dietetics	• Healthy eating and nutritional needs	
Neurology	• Medication management • Optimization of secondary stroke prevention	• Spasticity (medical management)
Nursing	• Bowel and bladder function • Medication administration • Patient and family education	• Self-management skills, ADLs, IADLs • Skin care
Occupational therapy	• Cognition • Driving • Durable medical equipment recommendations • Home safety • Self-management skills, ADLs, IADLs	• Sexual function and intimacy • Spasticity • Strength • Vision/vision perception
Ophthalmology	• Eyecare	• Strabismus assessment and procedures
Optometry/visual rehabilitation	• Eyecare • Functional eye exam • Nonoperative strabismus management	• Strabismus assessment and procedures • Visual field cut/blind spot/scotoma

[1] Some impairments/needs might have multiple consultants/referrals, depending on various factors (e.g., severity).

Sidebar 5a: Resources for Management of Post-Stroke Impairments/Needs[1]	
Consultants/Referrals	**Impairment/Need**
Physical medicine and rehabilitation (e.g., physiatry)	• Medication administration • Pain (medical management) • Prevention of post-stroke complications • Rehabilitation management, oversight, and direction, including assistance with return to work/ duty or school • Sexual function and intimacy • Spasticity (medical management)
Physical therapy	• Balance disorders and dizziness • Durable medical equipment recommendations • Exercise recommendations/aerobic reconditioning • Home safety • Motor/mobility problems • Pain • Sexual function and intimacy • Spasticity • Strength • Self-management skills, ADLs, IADLs
Primary care	• Management of common stroke risk factors • Hypertension • Diabetes mellitus • Hyperlipidemia • Tobacco use • Medication management • Management of comorbidities
Recreation therapy	• Adaptive sports • Community reentry • Functional cognition • Leisure and recreation participation • Self-management skills, ADLs, IADLs
Speech-language pathology	• Cognition • Communication • Self-management skills, ADLs, IADLs • Swallowing
Vocational rehabilitation	• Return to work/duty or school

Abbreviations: ADLs: activities of daily living; IADLs: instrumental activities of daily living

Sidebar 5b: Resources for Management of Post-Stroke Impairments/Needs[2]	
Impairment/Need	**Consultants/Referrals**
Adaptive sports	• Recreation therapy
Adjustment and coping	• Mental and behavioral health
Assistive technology	• Occupational therapy • Physical therapy • Rehabilitation engineers • Speech-language pathology
Balance disorders and dizziness	• Physical therapy
Behavioral smoking cessation	• Mental and behavioral health
Bowel and bladder function	• Nursing • Physical therapy

[2] Some impairments/needs might have multiple consultants/referrals, depending on various factors (e.g., severity).

Sidebar 5b: Resources for Management of Post-Stroke Impairments/Needs[2]	
Impairment/Need	**Consultants/Referrals**
Cognition	• Behavioral, neurology, neuropsychiatry • Behavioral and mental health • Occupational therapy • Recreation therapy • Speech-language pathology
Communication	• Speech-language pathology
Community reentry	• Occupational therapy • Physical therapy • Recreation therapy • Social work
Community resources	• Case management (social work, nursing, or both)
Driving	• Occupational therapy • Recreation therapy
Durable medical equipment recommendations	• Occupational therapy • Physical therapy
Emotion and behavior	• Behavioral and mental health • Case management (social work, nursing, or both)
Eye care	• Ophthalmology • Optometry/visual rehabilitation
Family and caregiver support	• Behavioral and mental health • Case management (social work, nursing, or both)
Financial resources	• Case management (social work, nursing, or both)
Functional eye exam	• Optometry/visual rehabilitation
Healthy eating and nutritional needs	• Dietetics
Leisure/recreation participation	• Occupational therapy • Recreation therapy
Management of common stroke risk factors (e.g., Hypertension, Diabetes mellitus, Hyperlipidemia, Tobacco use)	• Primary care
Medication management	• Clinical pharmacology • Neurology • Nursing • Physical medicine and rehabilitation • Primary care
Motor/mobility problems	• Occupational therapy • Physical therapy
Non-operative strabismus management	• Optometry/visual rehabilitation
Optimization of secondary stroke prevention	• Neurology • Primary care
Pain	• Behavioral and mental health • Complementary and integrative health (CIH) • Occupational therapy • Physical medicine and rehabilitation (e.g., physiatry) • Physical therapy

Sidebar 5b: Resources for Management of Post-Stroke Impairments/Needs[2]	
Impairment/Need	**Consultants/Referrals**
Patient and family education	• Behavioral and mental health • Neurology • Occupational therapy • Physical medicine and rehabilitation (e.g., physiatry) • Physical therapy • Primary care • Speech-language pathology
Prevention of post-stroke complications	• Behavioral and mental health • Neurology • Occupational therapy • Physical medicine and rehabilitation (e.g., physiatry) • Physical therapy • Primary care • Speech-language pathology
Rehabilitation management, oversight, and direction	• Case management • Physical medicine and rehabilitation (e.g., physiatry)
Return to work/duty or school	• Occupational therapy • Physical therapy • Speech-language pathology • Vocational rehabilitation
Self-management skills, ADLs, IADLs	• Nursing • Occupational therapy • Physical therapy • Recreation therapy • Speech-language pathology
Sexual function and intimacy	• Behavioral and mental health • Clinical pharmacist (drug interactions or side effects)] • Occupational therapy • Physical medicine and rehabilitation (e.g., physiatry) • Physical therapy
Skin care	• Nursing
Spasticity	• Neurology • Occupational therapy • Physical medicine and rehabilitation (e.g., physiatry) • Physical therapy
Strabismus assessment and procedures	• Ophthalmology
Strength	• Physical therapy • Occupational therapy
Swallowing	• Speech-language pathology
Vision/vision perception	• Occupational therapy • Optometry and neuro-optometry/low vision • Ophthalmology and neuro-ophthalmology
Visual field cut/blind spot/scotoma	• Optometry/visual rehabilitation

Identifying Patient Rehabilitation Goals

Box 18 in Module B instructs providers to, "Assess the patient and identify the patient's rehabilitation goals." A key priority in rehabilitation, goal-setting is one of the most significant factors in tailoring rehabilitation to the patient's needs. The participants in the patient focus group conducted as part of this CPG update placed significant value on setting personally meaningful goals with their provider that are modeled on the hobbies and activities in which they engaged before their stroke.

Patients with a history of stroke should have a holistic approach to their healthcare, with close attention paid to their current and desired levels of function. Rafsten et al. (2022) found that patient's with a history of stroke tended to self-identify with goals in the activity limitation domain of the International Classification of Functioning, Disability and Health model.(7) The most common goals reported were improving mobility outdoors, improving hand function, and being able to cook.(7) Goals should not be limited to self-care and mobility issues but should address what is required to return to active participation in one's life. This goal might require more in-depth conversations with patients and family members. Asking the following questions might help the provider understand how a stroke has impacted a person's ability to function and participate in meaningful activities, providing a steppingstone for creating collaborative, patient-centered goals.

- What things are most important for you in your life? Are you able to engage in those activities, relationships, interests, and so forth since your stroke? Would you like to do more or increase your capabilities in any of these important areas?
- Who are members of your support network, and are they available or able to help you with your current needs? Is this level of support okay with you, or do you want to work on being more independent in a certain activity?
- With what do you need help the most at home (e.g., bathing, dressing, toileting, eating)?
- Do your friends or family have concerns about your staying at home alone? For short periods? Overnight? Days or weeks at a time?
- How are you managing your medications, home therapies, or medical appointments?
- Are you concerned about your ability to pay your living expenses? Do you anticipate you will require financial assistance to pay medical expenses related to your stroke? Have you received information regarding financial assistance, resources, or both that might be available to you?
- Are you able to clean your house, manage your groceries, and prepare your meals? Are you able to maintain your yard or property?

- Have you returned to work? Why not? Do you need assistance to return to work or to obtain worksite modifications? Do you need to consider pursuing a different career?
- Do you want to return to driving? Do your friends or family have concerns about your driving?
- Have you been able to return to your leisure activities? How would you like to spend your free time? What has prevented you from doing so?
- Are you having difficulty reading or navigating from one location to another because of your vision?
- Are you having difficulties communicating or thinking clearly? Do others seem to have a hard time understanding what you are trying to tell or show them?
- Do others tell you that you repeat yourself more than you did in the past? Do you ever feel lost in conversations when talking to others?
- Do you have concerns about sex or intimacy?
- Do you have concerns regarding your bowel or bladder? Are you experiencing bladder incontinence or retention? Are you experiencing bowel incontinence, diarrhea, or constipation?
- How is your mood? Has your family communicated with you regarding changes that they have noticed with your mood? If these variations represent a big change, how are you adjusting? How is your family adjusting? Have you had thoughts that you would be better off dead or about hurting yourself in some way? Have you had thoughts about hurting others in some way?
- How are your relationships with your spouse, significant other, children, coworkers, or friends? Have you become more isolated, cut off, or irritable with others? Do you feel removed or distant from important, meaningful relationships in your life?
- How do you spend your time during the day? What is a typical day like?
- What are your biggest worries?

Remembering to communicate with the patient and the family member or caregiver in clear, non-technical terms is important as is assessing the patient's and the family member's or caregiver's understanding of the information. Patients and family members in the focus group emphasized how important communication was for them. They valued providers who listened to their perspectives and understood their experiences, challenges, and goals.

Highlighted Features of this Guideline

The current document is an update to the 2019 VA/DoD Stroke Rehabilitation CPG. The major strength of this CPG is the coordination and collaboration of the multidisciplinary team ensuring a broad representation of providers engaged in the management of stroke

rehabilitation. The following significant updates make it important that providers review this version of the CPG:

- Updated algorithm and sidebars to define a clinical flow;
- Added 24 new recommendations; reviewed and replaced 19 recommendations; reviewed and amended 3 recommendations; reviewed and did not change 1 recommendation; and deleted 16 recommendations from the 2019 VA/DoD Stroke Rehabilitation CPG.

Additional updates include an initial or expanded literature search or both into complementary and integrative health (CIH), including acupuncture, non-invasive brain stimulation techniques, management of post-stroke spasticity, and technology-based modalities including virtual reality (VR).

As noted above, the methodology used in developing this CPG has been updated since the prior versions and reflects a more rigorous application of the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) methodology than previous versions. The result is a refined CPG that includes methodologically rigorous, evidence-based recommendations for the rehabilitation of stroke survivors.

This CPG also provides expanded recommendations on research needed to strengthen future guidelines.

Scope of the CPG

This CPG is based on published clinical evidence and related information available through May 2, 2023. It is intended to provide general guidance on best evidence-based practices (see Appendix A in the full text version of the Stroke Rehabilitation CPG for additional information on the evidence review methodology). Although the CPG is intended to improve the quality of care and clinical outcomes (see Introduction), it is not intended to define a standard of care (i.e., mandated or strictly required care).

This CPG is intended for use by VA and DoD providers and others on the healthcare team assessing and managing patients who have experienced a stroke and are receiving rehabilitation services. Additionally, this CPG is intended for community-based providers involved in the care of Service members, beneficiaries, or Veterans who have experienced a stroke.

This CPG is intended for adult patients (18 years and older) who have experienced a stroke and are eligible for care in the VA or DoD health care delivery systems, and those who receive care from community-based providers. This CPG includes Veterans and Service members as well as their eligible adult dependents.

Methods

The Work Group used the GRADE approach to craft each recommendation and determine its strength. Per the GRADE approach, recommendations must be evidence based and cannot be made based on expert opinion alone. The GRADE approach uses the following four domains to inform the strength of each recommendation (see Determining Recommendation Strength and Direction).(8)

1. Confidence in the quality of the evidence
2. Balance of desirable and undesirable outcomes
3. Patient values and preferences
4. Other considerations, as appropriate (e.g., resource use, equity, acceptability, feasibility, subgroup considerations)

Using these four domains, the Work Group determined the relative strength of each recommendation (*Strong* or *Weak*). The strength of a recommendation is defined as the extent to which one can be confident that the desirable effects of an intervention outweigh its undesirable effects and is based on the framework above, which incorporates the four domains.(9) A *Strong* recommendation generally indicates *High* or *Moderate* confidence in the quality of the available evidence, a clear difference in magnitude between the benefits and harms of an intervention, similar patient values and preferences, and understood influence of other implications (e.g., resource use, feasibility).

In some instances, insufficient evidence exists on which to base a recommendation for or against a particular therapy, preventive measure, or other intervention. For example, the systematic evidence review might have found little or no relevant evidence, inconclusive evidence, or conflicting evidence for the intervention. The manner in which this finding is expressed in the CPG might vary. In such instances, the Work Group might include among its set of recommendations a statement of insufficient evidence for an intervention that might be in common practice although it is unsupported by clinical evidence and particularly if other risks of continuing its use might exist (e.g., high opportunity cost, misallocation of resources). In other cases, the Work Group might decide to exclude this type of statement about an intervention. For example, the Work Group might remain silent where an absence of evidence occurs for a rarely used intervention. In other cases, an intervention might have a favorable balance of benefits and harms but might be a standard of care for which no recent evidence has been generated.

Using these elements, the Work Group determines the strength and direction of each recommendation and formulates the recommendation with the general corresponding text (see Table 2).

Table 2. Strength and Direction of Recommendations and General Corresponding Text

Recommendation Strength and Direction	General Corresponding Text
Strong for	We recommend …
Weak for	We suggest …
Neither for nor against	There is insufficient evidence to recommend for or against …
Weak against	We suggest against …
Strong against	We recommend against …

Guideline Development Team

Table 3. Guideline Work Group and Guideline Development Team

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Patient-centered Care

Intended to consider patient needs and preferences, guideline recommendations represent a whole/holistic health approach to care that is patient-centered, culturally appropriate, and available to people with limited literacy skills and physical, sensory, or learning disabilities. VA/DoD CPGs encourage providers to use a patient-centered, whole/holistic health approach (i.e., individualized treatment based on patient needs, characteristics, and preferences). This approach aims to treat the particular condition while also optimizing the individual's overall health and wellbeing.

Regardless of the care setting, all patients should have access to individualized evidence-based care. Patient-centered care can decrease patient anxiety, increase trust

in providers, and improve treatment adherence.(10, 11) A whole/holistic health approach (https://www.va.gov/wholehealth/) empowers and equips individuals to meet their personal health and wellbeing goals. Good communication is essential and should be supported by evidence-based information tailored to each patient's needs. An empathetic and non-judgmental approach facilitates discussions sensitive to gender, culture, ethnicity, and other differences.

Shared Decision Making

This CPG encourages providers to practice shared decision making, a process in which providers, patients, and patient care partners (e.g., family, friends, caregivers) consider clinical evidence of benefits and risks as well as patient values and preferences to make decisions regarding the patient's treatment.(12) Shared decision making is emphasized in *Crossing the Quality Chasm,* an Institute of Medicine (IOM), now NAM, report in 2001 (13) and is inherent within the whole/holistic health approach. Providers must be adept at presenting information to their patients regarding individual treatments, expected risks, expected outcomes, and levels or settings of care or both, especially where patient heterogeneity in weighing risks and benefits might exist. The VHA and DHA have embraced shared decision making. Providers are encouraged to use shared decision making to individualize treatment goals and plans based on patient capabilities, needs, and preferences.

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Access to the full guideline and additional resources is available at: https://www.healthquality.va.gov/.