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# THE ROLE OF REHABILITATION GUIDANCE SPECIALISTS IN CONTINUITY OF STROKE REHABILITATION: ADDRESSING PATIENT INACTIVITY AND GAPS IN NON-TREATMENT PERIOD CARE

# ULOGA STRUČNJAKA ZA REHABILITACIJSKO USMJERAVANJE U KONTINUITETU REHABILITACIJE NAKON MOŽDANOG UDARA: RJEŠAVANJE PROBLEMA NEAKTIVNOSTI PACIJENATA I NEDOSTATAKA U BRIZI TOKOM PERIODA BEZ TRETMANA

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**Review Article**

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## ABSTRACT

Stroke rehabilitation is a prolonged and systematic process essential for optimizing patient recovery and quality of life. However, current clinical practice often faces challenges such as patients' weak awareness and engagement in active rehabilitation, as well as a lack of rehabilitation activities during non-treatment periods. Patients frequently remain in passive states due to insufficient professional guidance, while healthcare providers, burdened by heavy workloads, struggle to deliver continuous and individualized rehabilitation education and training. This review explores the critical role of rehabilitation guidance specialists throughout the entire stroke rehabilitation cycle. By analyzing the current deficiencies in patient-driven rehabilitation and the consequences of absent interventions during non-treatment times, the article highlights the positioning and operational models of rehabilitation guidance specialists. It further discusses their potential impact on improving rehabilitation outcomes. The integration of rehabilitation guidance specialists into stroke rehabilitation teams is proposed as a promising and conceptually feasible strategy to address existing gaps; however, direct empirical evidence for this specific role remains unavailable and rigorous clinical validation is needed. Theoretically, these specialists could enhance patient compliance and initiative, optimize rehabilitation resource utilization, and promote continuity in whole-cycle stroke rehabilitation, but these potential benefits have yet to be demonstrated in controlled studies. This review aims to provide a comprehensive understanding of how

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rehabilitation guidance specialists can transform stroke recovery paradigms and improve long-term patient prognosis.

**Keywords:** stroke; whole-cycle rehabilitation; rehabilitation guidance specialist; active rehabilitation; non-treatment period; patient education; rehabilitation training

## SAŽETAK

Rehabilitacija nakon moždanog udara dugotrajan je i sistematski proces od ključne važnosti za postizanje optimalnog oporavka i kvalitete života pacijenata. Međutim, u savremenoj kliničkoj praksi često se javljaju izazovi kao što su nedovoljna svijest pacijenata o značaju aktivne rehabilitacije i njihova nedovoljna uključenost u rehabilitacijski proces, kao i nedostatak rehabilitacijskih aktivnosti tokom perioda bez tretmana. Pacijenti često ostaju pasivni zbog nedostatka stručnog usmjeravanja, dok zdravstveni radnici, opterećeni velikim obimom posla, teško mogu osigurati kontinuiranu i individualiziranu rehabilitacijsku edukaciju i trening. U ovom preglednom radu razmatra se ključna uloga stručnjaka za rehabilitacijsko usmjeravanje tokom cjelokupnog ciklusa rehabilitacije nakon moždanog udara. Analizom postojećih nedostataka u rehabilitaciji koju aktivno provode sami pacijenti i posljedica izostanka intervencija tokom perioda bez tretmana, u radu se ističu pozicioniranje i modeli djelovanja stručnjaka za rehabilitacijsko usmjeravanje. Također se razmatra njihov potencijalni uticaj na poboljšanje ishoda rehabilitacije. Uključivanje stručnjaka za rehabilitacijsko usmjeravanje u timove za rehabilitaciju nakon moždanog udara predlaže se kao obećavajuća i konceptualno izvodljiva strategija za prevazilaženje postojećih nedostataka. Međutim, neposredni empirijski dokazi o ovoj specifičnoj ulozi još uvijek ne postoje te je potrebna rigorozna klinička provjera. Teorijski, ovi stručnjaci mogli bi unaprijediti saradljivost i inicijativu pacijenata, optimizirati korištenje rehabilitacijskih resursa i promovirati kontinuitet rehabilitacije tokom cjelokupnog ciklusa oporavka nakon moždanog udara, ali ove potencijalne koristi još uvijek nisu potvrđene u kontroliranim istraživanjima. Cilj ovog preglednog rada je pružiti sveobuhvatno razumijevanje načina na koji stručnjaci za rehabilitacijsko usmjeravanje mogu doprinijeti transformaciji pristupa oporavku nakon moždanog udara i poboljšanju dugoročne prognoze pacijenata.

**Ključne riječi**: moždani udar, rehabilitacija tokom cjelokupnog ciklusa, stručnjak za rehabilitacijsko usmjeravanje, aktivna rehabilitacija, period bez tretmana, edukacija pacijenata, rehabilitacijski trening

## INTRODUCTION

Stroke remains a leading cause of long-term disability worldwide, with hemiplegia—a paralysis affecting one side of the body—being one of the most common and debilitating sequelae. The ultimate goal of post-stroke rehabilitation is to maximize patients' functional independence and quality of life through comprehensive management that spans the acute, recovery, and chronic phases of stroke. Despite advances in rehabilitation techniques, many patients experience slow or incomplete recovery, particularly in motor function of the affected limbs, which significantly impairs activities of daily living (ADLs) and imposes substantial

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burdens on families and healthcare systems . Rehabilitation strategies such as physical therapy, robotic-assisted training, acupuncture, and neuromuscular facilitation have demonstrated efficacy in improving motor function, muscle strength, balance, and gait in stroke survivors with hemiplegia . However, these interventions are often delivered during scheduled treatment sessions, leaving non-treatment periods—such as nights, weekends, and holidays—largely devoid of structured rehabilitation activities. This discontinuity can contribute to secondary complications including muscle atrophy, joint contractures, cardiopulmonary deconditioning, and psychological dependence, which further hinder functional recovery (Papadatou, 2020).

A critical challenge in stroke rehabilitation is the insufficient patient engagement and active participation outside formal therapy hours. Many stroke survivors exhibit low motivation or lack the knowledge and skills to perform effective self-directed rehabilitation exercises during non-treatment times. This gap is exacerbated by the limited availability of rehabilitation professionals who, due to heavy clinical workloads, cannot provide continuous, individualized guidance and education to each patient throughout the entire rehabilitation cycle (Byrd et al., 2025). Consequently, the prevalent model of concentrated intervention during therapy sessions followed by prolonged inactive periods restricts the continuity and sustainability of rehabilitation gains. Emerging evidence underscores the importance of continuous, patient-centered rehabilitation approaches that integrate motor function training, cognitive engagement, and psychological support to optimize recovery trajectories . For example, interventions combining conventional therapy with novel modalities such as robotic devices, virtual reality, motor imagery, and brain-computer interfaces have shown promise in enhancing upper and lower limb function, balance, and attention in stroke patients . Yet, these technologies often require professional supervision and are not readily accessible during non-treatment periods.

The concept of a dedicated rehabilitation guidance specialist has been proposed as a novel solution to address these challenges by filling the rehabilitation void during non-treatment times. The definition of rehabilitation guidance specialist refers to: Different from the roles of doctors, nurses, therapists, and caregivers, professional technical personnel provide expert guidance and education throughout the patient's full-cycle rehabilitation process.This role involves a specialized staff member who systematically delivers rehabilitation education, daily exercise guidance, and psychological support to patients throughout the entire stroke rehabilitation continuum. By providing continuous, individualized coaching and motivation, the rehabilitation guidance specialist aims to enhance patients' self-efficacy and active engagement in their recovery process, thereby mitigating the risks associated with prolonged inactivity and passive dependence . Such a role could also alleviate the burden on rehabilitation physicians, therapists, and nursing staff, enabling more efficient allocation of clinical resources and potentially improving overall rehabilitation outcomes.

Furthermore, the integration of rehabilitation guidance specialists aligns with the growing recognition of the need for holistic, multidisciplinary approaches in stroke care that encompass physical, cognitive, and psychosocial dimensions. Studies have highlighted the interplay between motor impairments, trunk control, respiratory function, fatigue, and psychological well-being in stroke survivors, emphasizing that effective rehabilitation must

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address these interconnected factors to achieve meaningful functional recovery . The rehabilitation guidance specialist could serve as a pivotal link in this multidisciplinary framework, ensuring that patients receive consistent support and education tailored to their evolving needs across different phases of stroke recovery.

In summary, while current rehabilitation practices have made significant strides in improving motor function and independence in stroke patients with hemiplegia, substantial gaps remain in sustaining patient engagement and providing continuous intervention beyond formal therapy sessions. The establishment of rehabilitation guidance specialists represents a promising strategy to bridge these gaps by delivering systematic, personalized guidance and support during non-treatment periods. This approach has the potential to enhance patient motivation, prevent secondary complications, and optimize functional outcomes throughout the entire stroke rehabilitation cycle. It should be noted, however, that these potential benefits are extrapolated from related models—such as nurse-led transitional care interventions—rather than from direct testing of the rehabilitation guidance specialist role itself (Duncan et al., 2020).The following sections will delve into the current status of patient-initiated rehabilitation insufficiency, the consequences of absent non-treatment period interventions, the role and operational models of rehabilitation guidance specialists, and their prospective impact on rehabilitation efficacy.

## METHODS

This article is a narrative review aimed at critically examining the concept of the rehabilitation guidance specialist within the broader context of post-stroke care continuity. A literature search was conducted between March and June 2024 using four electronic databases: PubMed, Web of Science, Cochrane Library, and CNKI (China National Knowledge Infrastructure). The search period spanned from January 2010 to June 2024, reflecting the emergence of transitional care models and multidisciplinary rehabilitation frameworks over the past decade and a half. Key search terms included: "stroke rehabilitation," "continuity of care," "rehabilitation guidance specialist"/"rehabilitation coordinator," "active rehabilitation," "non-treatment period," "patient education," "transitional care," "nurse navigator," and "case management," combined using Boolean operators (AND/OR). Both English-language and Chinese-language peer-reviewed articles were considered.

Inclusion criteria comprised: (1) original research, systematic reviews, meta-analyses, or clinical guidelines addressing stroke rehabilitation models, components of care continuity, or professional roles within rehabilitation teams; (2) studies that examined patient engagement, self-management, or barriers to active rehabilitation participation; and (3) articles describing transitional care or care coordination interventions in stroke populations. Opinion pieces, editorials, conference abstracts, and studies focusing exclusively on acute medical management without rehabilitation components were excluded. Given the narrative nature of this review, no formal quality appraisal tool (e.g., AMSTAR-2 or PRISMA checklist) was applied; however, preference was given to studies published in journals indexed in the Science Citation Index (SCI) Q1 or Q2, as well as high-quality Chinese-language journals

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indexed in the Chinese Core Journal (CCJ) system. The literature synthesis adopted a thematic approach, organizing evidence around four domains: (i) barriers to patient-initiated rehabilitation; (ii) consequences of non-treatment period inactivity; (iii) the role and operational model of rehabilitation guidance specialists; and (iv) comparable professional roles in stroke care continuity. This methodological framework enables a critical, integrative analysis of the proposed role while acknowledging the absence of direct empirical evidence specific to the rehabilitation guidance specialist concept.

## Insufficient Patient-Initiated Rehabilitation After Stroke: Current Status and Causal Analysis

### Impact of Patient Cognition and Psychological Barriers on Active Rehabilitation

Post-stroke patients frequently encounter significant cognitive impairments, including deficits in attention, memory, and executive function, which critically hinder their ability to comprehend rehabilitation instructions and retain training regimens. Such cognitive dysfunctions impede the initiation of active rehabilitation behaviors, as patients struggle to internalize and execute prescribed exercises independently. Moreover, psychological disorders such as post-stroke depression, anxiety, and feelings of stigma are prevalent and contribute to a pervasive sense of helplessness and diminished self-efficacy. This psychological burden fosters a passive attitude toward recovery, wherein patients perceive rehabilitation as the sole responsibility of healthcare providers rather than an active personal endeavor. Compounding these issues is a widespread lack of awareness regarding the chronic nature of stroke rehabilitation; many patients mistakenly believe that functional recovery is confined to the inpatient phase, neglecting the critical importance of self-directed training during non-treatment periods. Studies have highlighted that such misconceptions and psychological barriers result in reduced engagement with rehabilitation activities outside formal therapy sessions, thereby limiting functional gains and prolonging disability (Baatiema et al., 2021; Wu et al., 2022). The interplay between cognitive deficits and psychological factors creates a formidable obstacle to patient-initiated rehabilitation, underscoring the need for tailored interventions that address both domains. For instance, speech-language pathologists report variability in prognostication communication, which may influence patient motivation and expectations, further affecting rehabilitation engagement (Cheng et al., 2020). Additionally, the lack of structured support for mental health and social reintegration exacerbates these challenges, as patients often lack the necessary resources to overcome psychological hurdles. Therefore, addressing cognitive and psychological barriers through comprehensive education, counseling, and supportive care is essential to empower stroke survivors to actively participate in their rehabilitation journey.

### Vicious Cycle of Rehabilitation Knowledge Deficiency and Inadequate Education

A critical factor contributing to insufficient patient-initiated rehabilitation is the pervasive lack of fundamental rehabilitation knowledge among patients and their families. Many are unaware of essential early mobilization techniques, such as proper positioning, joint range of

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motion maintenance, and safe activity progression, leading to uncertainty and inactivity during non-treatment periods. Existing educational strategies predominantly rely on one-time verbal instructions or distribution of informational brochures, which lack the continuity, interactivity, and personalization necessary for effective knowledge assimilation and behavioral change. This fragmented approach results in poor internalization of rehabilitation principles and minimal translation into daily self-care practices. Healthcare professionals, particularly nursing and rehabilitation staff, face substantial workload pressures that curtail the time available for patient education. Furthermore, the absence of standardized educational protocols leads to inconsistent and repetitive messaging, diminishing the overall quality and impact of rehabilitation guidance. Surveys among physiotherapists in developing countries reveal barriers such as insufficient time, lack of organizational mandates, and inadequate resources that hinder evidence-based practice implementation, further perpetuating this educational gap (Ibikunle et al., 2021; Gururaj et al., 2021). The deficiency in continuous, tailored education creates a vicious cycle where patients remain ill-equipped to engage in self-directed rehabilitation, which in turn limits functional recovery and increases dependence on healthcare services. To break this cycle, rehabilitation education must evolve into a dynamic, patient-centered process incorporating repeated, interactive sessions that adapt to individual cognitive and psychosocial needs. Integration of multidisciplinary teams and utilization of technology-based platforms may enhance education delivery and patient engagement, ultimately fostering sustained active rehabilitation behaviors.

**Environmental and Systemic Constraints on Active Rehabilitation**

The physical and organizational environment within hospital settings significantly influences patients' capacity and motivation to engage in active rehabilitation. Many inpatient wards lack rehabilitation-oriented design features, such as supportive handrails, accessible training equipment, and safe spaces for mobility exercises, which restrict patients' opportunities to practice independently even when willing. Institutional policies often prioritize patient safety through prolonged bed rest, viewing immobility as a protective measure rather than recognizing the risks of deconditioning and functional decline. This safety-first approach inadvertently discourages patient activity during non-treatment periods. Additionally, rehabilitation activities outside formal therapy sessions are seldom integrated into routine nursing care workflows, and there is an absence of incentive mechanisms to promote patient mobilization. The rehabilitation team's roles and responsibilities are frequently ill-defined, with no dedicated personnel assigned to oversee daily patient rehabilitation guidance, resulting in fragmented care and unclear accountability. Qualitative studies from various healthcare systems underscore these systemic barriers, highlighting inadequate interdisciplinary coordination and insufficient leadership in rehabilitation team conferences as factors limiting effective rehabilitation delivery (Kushner & Strasser, 2020; Wu et al., 2022). Moreover, resource constraints, including staffing shortages and limited training in rehabilitation principles among nursing staff, further impede the provision of consistent rehabilitation support. Addressing these environmental and systemic limitations requires a multifaceted approach involving redesign of care environments to facilitate mobility,

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incorporation of rehabilitation activities into standard nursing care protocols, clear delineation of team roles with dedicated rehabilitation coordinators, and institutional policies that balance safety with the promotion of patient autonomy. Such reforms are vital to create an enabling environment that supports and encourages patient-initiated rehabilitation throughout the stroke recovery continuum.

## Consequences and Harms of Missing Rehabilitation Interventions during Non-Treatment Periods

### Accelerated Occurrence of Secondary Functional Disorders

The absence of rehabilitation interventions during non-treatment periods in stroke patients significantly accelerates the development of secondary functional impairments, which complicates recovery and diminishes rehabilitation efficacy. Prolonged immobility, particularly extended bed rest, leads to muscle disuse atrophy, with the lower limb and core muscle groups being especially vulnerable. This rapid decline in muscle strength critically undermines the patient's ability to participate effectively in subsequent standing and gait training, thereby impeding functional restoration. Moreover, joints immobilized in fixed positions over long durations are prone to contractures, notably in the shoulder, hip, and ankle joints. These contractures not only increase rehabilitation difficulty but also cause pain, further discouraging active participation in therapy. Cardiopulmonary function also deteriorates due to inactivity, predisposing patients to complications such as orthostatic hypotension, atelectasis, and deep vein thrombosis, which extend hospitalization duration and increase morbidity. The pathophysiological basis of these complications involves muscle wasting, joint capsule fibrosis, and impaired autonomic regulation, all exacerbated by the lack of continuous mobilization and therapeutic engagement outside formal treatment sessions. Studies underscore that early and consistent mobilization mitigates these risks by preserving muscle mass, maintaining joint range of motion, and enhancing cardiopulmonary resilience. For instance, clinical trials have demonstrated that initiating mobilization within 24 to 72 hours post-stroke reduces the incidence of secondary complications and improves functional outcomes. Conversely, gaps in rehabilitation during non-treatment periods create a window for rapid deconditioning, which not only delays recovery but may also lead to irreversible disability. Therefore, the lack of rehabilitation interventions during these intervals constitutes a critical barrier to optimal stroke recovery, emphasizing the necessity for continuous, multidisciplinary approaches that extend beyond scheduled therapy sessions to include patient education, caregiver involvement, and use of assistive technologies to maintain activity levels and prevent secondary functional decline (Zheng et al., 2021; Arya et al., 2021; Gillen et al., 2021).

### Interruption and Regression of Rehabilitation Effects

Rehabilitation after stroke relies heavily on the principles of neuroplasticity, which necessitate sustained, repetitive functional training to induce and consolidate neural reorganization. Interruptions during non-treatment periods disrupt this continuity, leading to partial regression of previously achieved gains. The neurobiological underpinning involves the dependence of

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synaptic strengthening and cortical remapping on consistent activity-dependent stimuli. When patients experience inactivity during off-therapy times, the lack of sensory input and motor engagement results in diminished neuroplastic responses, causing a decline in motor and cognitive functions. Clinically, this manifests as fluctuations in physical capabilities, requiring therapists to reassess and modify rehabilitation plans frequently, thereby reducing overall efficiency. Furthermore, the psychological impact of stalled progress is profound; patients often develop frustration and decreased motivation when they perceive a lack of continuous improvement. This negative emotional state fosters a vicious cycle of inactivity, functional decline, and further demotivation, which can severely compromise long-term recovery trajectories. Empirical evidence supports that continuous engagement, including home-based exercises and non-therapist-led activities, sustains neuroplasticity and functional gains. For example, studies utilizing brain-computer interface therapies and robotic-assisted training have shown that consistent practice enhances motor planning and execution by modulating cortical potentials and muscle activation patterns. Conversely, gaps in rehabilitation lead to diminished cortical excitability and reduced expression of neurotrophic factors such as BDNF and VEGF, which are critical for synaptogenesis and angiogenesis. Therefore, addressing the discontinuity of rehabilitation during non-treatment periods is essential to prevent functional regression and to maintain the momentum of recovery, highlighting the importance of structured interventions that extend beyond formal therapy sessions (Peters et al., 2020; Boyne et al., 2020; Wang et al., 2020; Bao et al., 2020).

**Wastage of Medical Resources and Prolongation of Rehabilitation Cycle**

The absence of rehabilitation interventions during non-treatment periods not only adversely affects patient outcomes but also leads to inefficient utilization of healthcare resources and prolongs the overall rehabilitation timeline. Patients experiencing secondary complications due to inactivity require extended hospital stays, thereby occupying beds and consuming medical personnel time that could be allocated to other patients. The increased incidence of complications such as pneumonia, pressure ulcers, and thromboembolic events necessitates additional treatments, including pharmacological management and specialized nursing care, further straining healthcare systems. Economically, this translates into higher direct medical costs and indirect costs related to prolonged disability and loss of productivity. Moreover, suboptimal recovery outcomes due to interrupted rehabilitation often result in patients requiring long-term community or home-based care, imposing additional burdens on social support systems and caregivers. The cumulative effect is a significant increase in societal healthcare expenditures and diminished quality of life for patients. Research indicates that early and continuous rehabilitation interventions reduce hospital length of stay and improve functional independence, thereby decreasing the need for costly long-term care. For instance, intensive prevention programs involving repetitive patient engagement by non-physician staff have demonstrated cost savings by reducing recurrent events and improving risk factor control. Conversely, gaps in rehabilitation during non-treatment periods undermine these benefits, leading to resource wastage and extended rehabilitation cycles. Therefore, integrating continuous rehabilitation strategies that encompass non-treatment times is

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imperative to optimize resource utilization, enhance recovery efficiency, and reduce the economic and social burden of stroke (Osteresch et al., 2021; Chen et al., 2021; Di Marco et al., 2021).

## Role Positioning and Work Model of Rehabilitation Guidance Specialists

### Responsibilities and Core Tasks of Rehabilitation Guidance Specialists

Rehabilitation guidance specialists play a pivotal role in the comprehensive care of stroke patients by addressing the critical gap of insufficient patient-initiated rehabilitation and the lack of interventions during non-therapy periods. Their responsibilities begin with conducting thorough admission rehabilitation assessments for each stroke patient, encompassing evaluations of functional status, cognitive levels, psychological conditions, and rehabilitation willingness. This holistic assessment enables the formulation of individualized rehabilitation plans tailored specifically for non-therapy periods, which are crucial times often overlooked in traditional rehabilitation settings. Daily scheduled sessions—such as morning, post-lunch, and pre-sleep—are conducted either one-on-one or in small groups, focusing on education about posture management, joint range of motion exercises, respiratory training, bed mobility techniques, and safe transfer methods. This structured education empowers patients with knowledge and skills to actively engage in rehabilitation outside formal therapy sessions. Moreover, rehabilitation guidance specialists supervise and guide patients in executing these plans, meticulously documenting adherence and patient feedback to allow timely adjustments in training intensity and content, ensuring safety and efficacy. Their role extends to maintaining close communication with rehabilitation physicians, therapists, and nursing staff, providing detailed reports on patients' performance during non-therapy periods and collaborating to optimize overall rehabilitation strategies. This integrative approach not only enhances patient engagement and functional recovery but also addresses the common issue of compensation patterns during unsupervised rehabilitation, as highlighted by studies utilizing real-time monitoring and feedback to reduce maladaptive compensations (Cai et al., 2020). Furthermore, the specialists' involvement in non-therapy periods aligns with evidence emphasizing the importance of early and continuous rehabilitation interventions to improve outcomes and reduce disability (Hsu et al., 2020). By bridging the gap between formal therapy and patient self-management, rehabilitation guidance specialists ensure a continuum of care that maximizes recovery potential throughout the stroke rehabilitation cycle.

### Qualification Requirements and Training System for Rehabilitation Guidance Specialists

The qualifications and training of rehabilitation guidance specialists are fundamental to their effectiveness in stroke rehabilitation. Ideally, these specialists should possess a background in rehabilitation therapy, nursing, or related medical fields, holding professional licenses such as rehabilitation therapist or nurse practitioner certifications. Given the complexity of stroke pathology and rehabilitation needs, specialized training focusing on stroke rehabilitation is essential. This training encompasses comprehensive knowledge of stroke pathophysiology,

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rehabilitation assessment techniques, and common rehabilitation exercises tailored to stroke patients. Additionally, communication skills and psychological support strategies are critical components, enabling specialists to effectively educate and motivate patients while addressing emotional and cognitive challenges that often accompany stroke recovery. Emergency response and first aid competencies are also necessary to manage potential adverse events during rehabilitation activities. Establishing standardized training curricula and rigorous assessment mechanisms ensures that specialists are competent to independently guide patients through rehabilitation plans. Continuous professional development and periodic skill updates are vital to keep pace with evolving rehabilitation technologies and methodologies, such as the integration of wearable devices and virtual reality systems that have shown promise in enhancing upper limb function and patient engagement. Moreover, training programs should incorporate evidence-based practices and ethical considerations, particularly in patient-centered care and discharge planning, to foster holistic rehabilitation approaches (Castro & Tsimicalis, 2020). By maintaining high qualification standards and robust training systems, rehabilitation guidance specialists can deliver consistent, safe, and effective rehabilitation guidance, ultimately improving patient outcomes and satisfaction.

## Workflow and Team Collaboration Model of Rehabilitation Guidance Specialists

The workflow and team collaboration model of rehabilitation guidance specialists are structured to ensure seamless integration into the multidisciplinary stroke rehabilitation process. The workflow initiates with an admission assessment, where the specialist evaluates the patient's functional and psychological status and formulates a personalized rehabilitation plan for non-therapy periods. This plan is then implemented through daily execution and meticulous recording of patient activities and responses. Regular evaluations of rehabilitation effectiveness are conducted, facilitating timely adjustments to the plan based on patient progress and feedback. Prior to discharge, specialists provide comprehensive guidance to ensure continuity of rehabilitation in home or community settings. Collaboration within the rehabilitation team is facilitated through participation in daily morning meetings or rehabilitation rounds, where specialists report on patients' non-therapy period performance and receive professional input from therapists and physicians. This bidirectional communication ensures that rehabilitation plans are dynamically optimized and patient needs are promptly addressed. The adoption of information technology further enhances this collaborative model; specialists utilize mobile devices to record real-time patient training data, enabling the entire team to access, analyze, and track rehabilitation progress continuously. Such digital platforms promote data continuity and traceability, which are critical for monitoring long-term rehabilitation outcomes and facilitating evidence-based adjustments. This integrated workflow and team collaboration model not only improve rehabilitation efficiency but also foster a patient-centered approach, aligning with contemporary trends in healthcare delivery that emphasize multidisciplinary coordination and data-driven decision-making (Hancock et al., 2020). By embedding rehabilitation guidance specialists within this framework, stroke rehabilitation programs can achieve greater coherence, responsiveness, and effectiveness.

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## Work Focus of Rehabilitation Guidance Specialists at Different Rehabilitation Stages

The focus of rehabilitation guidance specialists varies across the acute, recovery, and sequelae phases of stroke rehabilitation, reflecting the evolving needs of patients throughout their recovery journey. In the acute phase, specialists prioritize guiding patients through essential early interventions such as bed positioning changes, passive joint mobilization, respiratory exercises, and early sitting training. These interventions are critical for preventing complications like contractures and pneumonia, while also fostering patient confidence in their rehabilitation potential. Evidence underscores the importance of early mobilization in improving clinical outcomes, with studies demonstrating that mobilization within the first week post-stroke is associated with better functional recovery (Kitaji et al., 2020). During the recovery phase, the emphasis shifts to strengthening active rehabilitation efforts, including bridge exercises in bed, sitting balance training, standing preparation, and simulation of activities of daily living. These active interventions aim to enhance functional independence and facilitate the transition to more complex mobility and self-care tasks. The use of technology-assisted therapies, such as robot-assisted arm training, has shown to be effective in this phase, providing additional motivation and precise feedback (Chen et al., 2020). In the sequelae phase, specialists focus on home-based rehabilitation guidance, advising on environmental modifications, utilization of community resources, long-term exercise planning, and psychological support to ensure sustained rehabilitation gains and quality of life. This phase addresses the challenges of maintaining rehabilitation momentum outside clinical settings and mitigating caregiver burden, which has been shown to increase during inpatient rehabilitation but can be alleviated through education and support programs. By tailoring their interventions to the specific demands of each rehabilitation stage, rehabilitation guidance specialists facilitate a continuum of care that maximizes recovery potential and supports patients' reintegration into their communities.

## Comparable Roles in Stroke Care Continuum

The proposition of a rehabilitation guidance specialist is not without conceptual precedent. Several existing professional roles have been developed to strengthen continuity of care and improve patient engagement across the stroke recovery trajectory, providing an evidentiary context for the current proposal.

The stroke nurse navigator represents one of the most rigorously evaluated comparable models. In the Comprehensive Post-Acute Stroke Services (COMPASS) pragmatic trial conducted across 40 hospitals in the United States, the introduction of a nurse navigator who conducted follow-up telephone calls, organized care coordination, and delivered patient education resulted in the intention-to-treat analysis found no significant difference in functional status between groups; however, a post hoc analysis suggested potential benefits among patients who received the intervention per protocol (Stroke Impact Scale-16 score) at 90 days compared with usual care (Duncan et al., 2020). Although the effect size was modest, the study demonstrated that assigning a dedicated professional to bridge gaps in post-acute

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care is both feasible and beneficial in a real-world setting. Similarly, a scientific statement on nurse-led transitional care indicates that such interventions can improve quality of life at one year post-stroke, though evidence regarding mortality and readmission reductions remains mixed (Camicia et al., 2021). Systematic reviews of transitional care interventions—which often involve case management—report beneficial effects on functional status in the short term, although long-term gains are less consistently observed; evidence regarding patient satisfaction remains inconclusive (O'Callaghan et al., 2022).

However, these established roles differ from the proposed rehabilitation guidance specialist in a critical aspect. Nurse navigators and case managers predominantly operate across the hospital-to-community transition, focusing on discharge planning, follow-up appointment scheduling, and community resource linkage. Their involvement in the inpatient rehabilitation period—and specifically during non-treatment intervals such as evenings, weekends, and holidays—is typically minimal (Duncan et al., 2020). By contrast, the rehabilitation guidance specialist is explicitly designed to address the therapy void within the inpatient setting by delivering daily hands-on exercise guidance, posture management education, and psychological support during precisely those intervals when formal therapy sessions are not scheduled. In this sense, the rehabilitation guidance specialist complements rather than duplicates existing roles.

Nevertheless, the experience with nurse navigator and case manager models offers important lessons. First, the evidence base for these roles, while suggestive of benefit, is characterized by heterogeneity in intervention design, outcome measurement, and study quality—limitations that would likely also apply to evaluations of the rehabilitation guidance specialist. Second, the COMPASS trial identified challenges including inconsistent role definition across sites and variable patient engagement, underscoring the importance of standardized protocols and training curricula (Duncan et al., 2020). Finally, comparative effectiveness research is needed to determine whether the rehabilitation guidance specialist yields incremental benefits beyond those achievable through existing nurse-led or case-manager-led coordination models. Without such evidence, claims regarding the unique value of this role remain necessarily provisional.

## Enhancing Patient Active Participation and Adherence in Stroke Rehabilitation

The establishment of rehabilitation guidance specialists is hypothesized to play a facilitative role in transforming stroke patients from passive recipients to active participants in their recovery journey, which may in turn improve adherence to rehabilitation protocols—though this proposition awaits empirical testing. Continuous and individualized education and guidance provided by these specialists enable patients to comprehend the underlying principles of rehabilitation and recognize their own responsibilities in the process. This understanding fosters a shift in mindset, encouraging patients to engage proactively in their rehabilitation exercises rather than merely complying passively. The development of a trusting relationship between the specialist and the patient is fundamental; it offers emotional support and immediate feedback, which enhances patients' self-efficacy and mitigates anxiety and withdrawal behaviors commonly observed during rehabilitation. Such psychological

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reinforcement is crucial, as post-stroke patients often face emotional challenges that can impede their motivation and participation. Furthermore, rehabilitation guidance specialists facilitate the integration of non-therapy period training into patients' daily routines, promoting the internalization of rehabilitative behaviors as lifestyle habits. This habitual engagement is essential for sustaining long-term adherence, particularly after hospital discharge when structured therapy sessions are less frequent. Empirical evidence supports that interventions combining education, emotional support, and behavioral guidance lead to improved motor function recovery and activities of daily living (ADL) outcomes in stroke survivors (Huang et al., 2022; Yao et al., 2025). For instance, mechanical digit sensory stimulation combined with conventional rehabilitation has demonstrated enhanced motor function and reduced spasticity, effects likely amplified by patient adherence fostered through guidance (Yao et al., 2025). Additionally, the use of novel rehabilitation modalities such as eye-acupuncture integrated with rehabilitation training has shown promising results in hemiplegic patients, underscoring the importance of patient engagement in complex therapeutic regimens (Shao et al., 2020). The role of rehabilitation guidance specialists in educating patients about such therapies and encouraging consistent practice is therefore indispensable. Moreover, the psychological benefits of specialist-patient interactions cannot be overstated; by reducing rehabilitation-related anxiety and fostering a sense of control, specialists help overcome barriers to active participation. This is particularly relevant given the high prevalence of post-stroke fatigue and cognitive impairments that can diminish motivation (Sugai & Tsushima, 2026). In summary, rehabilitation guidance specialists enhance patient active participation and adherence through personalized education, emotional support, and behavioral integration strategies, which collectively contribute to improved functional recovery and quality of life in stroke survivors.

**Optimizing Rehabilitation Resource Utilization and Shortening Rehabilitation Duration**

The integration of rehabilitation guidance specialists into the stroke care continuum has the potential—if validated in clinical trials—to optimize the utilization of rehabilitation resources and potentially accelerate the recovery timeline. By effectively leveraging non-therapy periods, these specialists increase the total daily duration of rehabilitation exercises, thereby enhancing the intensity and frequency of functional training without necessitating additional formal therapy sessions. This augmentation of rehabilitation dosage has been correlated with faster functional recovery and a reduction in average hospital stay by approximately 10% to 20%, which not only benefits patients but also alleviates healthcare system burdens. The increased rehabilitation intensity facilitated by guidance specialists contributes to improved motor function, balance, and activities of daily living, as evidenced by studies employing robotic-assisted devices and functional electrical stimulation in post-stroke hemiplegia (Jin et al., 2024; Ueda et al., 2022). Furthermore, by promoting adherence to rehabilitation regimens during non-treatment times, specialists help prevent secondary complications such as muscle atrophy, joint contractures, and pressure ulcers, which are common contributors to prolonged hospitalization and increased healthcare costs. The prevention of such complications reduces the incidence of additional medical interventions and associated expenditures. Enhanced rehabilitation outcomes also translate into higher bed turnover rates, mitigating the strain on

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inpatient rehabilitation facilities and enabling more patients to access timely care. Importantly, improved functional recovery reduces patients' dependence on community rehabilitation services post-discharge, thereby decreasing the long-term social and economic burden on caregivers and healthcare infrastructure. This is particularly significant given the growing prevalence of stroke survivors requiring extended community-based support (Hirano & Nitta, 2020; Epstein et al., 2022). Moreover, the early and sustained engagement in rehabilitation facilitated by guidance specialists aligns with evidence supporting the benefits of early mobilization and intensive therapy in stroke recovery (Hawkes, 2025). In conclusion, rehabilitation guidance specialists enhance resource efficiency and shorten rehabilitation duration by maximizing therapy intensity through non-treatment period interventions, preventing secondary complications, and promoting sustained functional independence, thereby delivering both clinical and economic advantages.

## Promoting Professional Division of Labor and Collaborative Efficiency within Rehabilitation Teams

The introduction of rehabilitation guidance specialists into multidisciplinary stroke rehabilitation teams fosters clearer role delineation and enhances collaborative efficiency, thereby improving overall patient care quality. By assigning specific responsibilities—physicians focusing on diagnosis and treatment planning, therapists delivering specialized therapeutic interventions, nursing staff managing basic care, and guidance specialists overseeing daily patient education and adherence monitoring—the team operates with greater clarity and reduced overlap. This structured division of labor minimizes redundancy and prevents task diffusion, which can otherwise lead to inefficiencies and compromised patient outcomes. Rehabilitation guidance specialists serve as vital communication conduits or "bridges" between patients and professional therapists, facilitating timely feedback on patient status, adherence challenges, and progress. This real-time information exchange reduces delays in adjusting rehabilitation plans and enables prompt resolution of emerging issues, thereby enhancing responsiveness and coordination within the team. Additionally, the systematic collection and analysis of data by guidance specialists provide objective metrics for evaluating rehabilitation effectiveness, including adherence rates, functional improvements, and complication incidences. These data-driven insights support evidence-based decision-making and continuous quality improvement initiatives within the rehabilitation program. The availability of such objective feedback is crucial for tailoring individualized rehabilitation strategies and optimizing resource allocation. Furthermore, the integration of guidance specialists aligns with contemporary models of patient-centered care and interprofessional collaboration, which emphasize coordinated efforts and shared accountability. Studies have demonstrated that multidisciplinary approaches with clear role definitions and effective communication improve functional outcomes and patient satisfaction in stroke rehabilitation (Huang et al., 2022; Chang et al., 2022). In summary, rehabilitation guidance specialists enhance professional division of labor and team collaboration by clarifying roles, facilitating communication, and providing objective data to inform clinical decisions, ultimately contributing to more efficient and effective stroke rehabilitation.

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## Challenges and Strategies in Implementing Rehabilitation Guidance Specialists

The implementation of rehabilitation guidance specialists within stroke care systems presents several challenges that require strategic solutions to ensure successful integration and sustainability. Firstly, the increased human resource cost associated with recruiting or training specialists imposes a significant initial financial burden on healthcare institutions. To mitigate this, a phased approach is advisable, initiating pilot programs in high-demand departments where the impact is most pronounced, followed by gradual expansion. Additionally, exploring partnerships with community rehabilitation agencies can facilitate resource sharing and reduce institutional costs. Secondly, ambiguity in role definitions may lead to overlaps with existing positions such as nurses or therapy assistants, potentially causing inefficiencies and interprofessional conflicts. This concern is not merely theoretical: a systematic review of barriers to evidence-based acute stroke care found that ambiguous professional boundaries and poor interdisciplinary communication are among the consistently reported organizational obstacles to effective care delivery (Baatiema et al., 2017). Without clear role delineation, the introduction of a new specialist category risks exacerbating rather than resolving existing coordination failures. Developing comprehensive job descriptions and standardized workflows is essential to delineate responsibilities clearly, prevent duplication of efforts, and foster collaborative practice. Thirdly, patient and family acceptance of non-therapy period interventions may vary, with some expressing skepticism regarding the efficacy or necessity of additional training outside formal therapy sessions. Evidence from nurse-led transitional care trials suggests that patient engagement with non-physician coordinators is influenced by baseline health literacy, trust in the healthcare system, and cultural attitudes toward professional roles—factors that vary considerably across populations and settings (Camicia et al., 2021). Low acceptance could undermine the effectiveness of the rehabilitation guidance specialist role in contexts where patients expect all therapeutic input to come from licensed therapists or physicians. Addressing this requires not only patient education and culturally tailored engagement strategies, but also robust educational initiatives that communicate the benefits of continuous rehabilitation through evidence and success stories, involving patients in the planning process to enhance buy-in and adherence. Furthermore, the economic case for the rehabilitation guidance specialist role remains entirely speculative. While preliminary evidence from comparable programs suggests that care coordination may offset costs by reducing preventable complications and shortening length of stay, rigorous cost-effectiveness analyses are lacking. Given that healthcare systems in low- and middle-income settings already face severe staffing shortages, the affordability and scalability of this role cannot be assumed. Lastly, the absence of standardized evaluation frameworks for assessing the effectiveness of rehabilitation guidance specialists hampers objective appraisal and quality assurance. Establishing multidimensional outcome measures encompassing functional improvement, adherence rates, complication reduction, and patient satisfaction is critical. Such frameworks enable ongoing monitoring, facilitate research, and justify resource

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allocation. The development of these evaluation systems should be informed by existing rehabilitation outcome measures and adapted to capture the unique contributions of guidance specialists. In conclusion, addressing the challenges of cost, role clarity, patient acceptance, and outcome evaluation through targeted strategies is imperative for the effective incorporation of rehabilitation guidance specialists into stroke rehabilitation programs, thereby maximizing their potential benefits.

## CONCLUSION

The development of the rehabilitation guidance specialist role represents a significant advancement in addressing the critical gaps within post-stroke rehabilitation systems, particularly the insufficient patient-initiated rehabilitation and the lack of intervention during non-treatment periods. From an expert perspective, this innovation strategically targets the often-overlooked intervals outside formal therapy sessions, which are crucial for sustaining rehabilitation momentum and preventing secondary functional decline. By assigning dedicated personnel to provide daily education, training guidance, and psychological support, the model effectively enhances patient engagement and adherence, which are key determinants of successful rehabilitation outcomes.

Balancing the diverse research perspectives on post-stroke rehabilitation, the introduction of rehabilitation guidance specialists aligns with evidence emphasizing the importance of continuous, patient-centered care. Traditional rehabilitation models frequently focus on therapist-led interventions during scheduled sessions, inadvertently neglecting the patient's active role in their recovery journey. The specialist role bridges this gap by fostering a supportive environment that empowers patients to take ownership of their rehabilitation outside clinical settings. This approach not only complements existing therapies but also optimizes the rehabilitation team's workflow by clarifying roles and improving interprofessional collaboration. Consequently, it holds promise for shortening rehabilitation cycles and reducing healthcare costs, thereby enhancing the overall efficiency and sustainability of stroke care.

However, the implementation of this role is not without challenges. Concerns regarding increased human resource costs, clear delineation of responsibilities, and robust methods for evaluating intervention effectiveness must be carefully addressed. From a research standpoint, these challenges underscore the need for rigorous pilot programs and standardized training protocols to ensure consistency and quality in specialist-led interventions. Moreover, multidisciplinary collaboration is essential to integrate this role seamlessly into existing care frameworks, ensuring that specialists complement rather than duplicate the efforts of other rehabilitation professionals.

Looking forward, the field would benefit greatly from well-designed clinical trials that quantitatively assess the impact of rehabilitation guidance specialists on functional recovery, patient satisfaction, and long-term health outcomes. Such evidence is critical to validate the model's efficacy and inform best practices for its broader adoption. Additionally, exploring the applicability of this role beyond stroke rehabilitation—such as in other neurological

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disorders—could expand its utility and contribute to more comprehensive neurorehabilitation strategies.

In conclusion, the rehabilitation guidance specialist model offers a conceptually promising direction for addressing longstanding deficiencies in post-stroke rehabilitation by enhancing patient autonomy and filling critical care gaps during non-treatment periods. However, it must be emphasized that the evidence supporting this specific role is currently indirect: it is inferred from related but distinct models such as stroke nurse navigators and transitional care coordinators, for which the evidence is suggestive but not conclusive (Duncan et al., 2020; Camicia et al., 2021; O'Callaghan et al., 2022). The potential benefits in improving rehabilitation outcomes, optimizing resource utilization, and fostering multidisciplinary collaboration are substantial in theory but remain hypothetical until validated through well-designed pilot studies and randomized controlled trials. Rigorous clinical research—incorporating process measures (e.g., adherence rates, time spent in active rehabilitation during non-treatment periods), functional outcomes, patient-reported experience, and health economic endpoints—is urgently needed to determine whether the rehabilitation guidance specialist model can deliver on its theoretical promise and to establish its place, if any, within standard stroke rehabilitation protocols.

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