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Stroke

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June 2025

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Costs and Benefits of the Melbourne Mobile Stroke Unit Compared With Standard Ambulance: Causal Analysis Using Observational Linked Data

Stroke

https://www.ahajournals.org/doi/10.1161/STROKEAHA.124.048403

Global prevalence and risk factors of delirium among patients following acute stroke: A systematic review and meta-analysis

Journal of Stroke and Cerebrovascular Diseases

https://www.strokejournal.org/article/S1052-3057(24)00664-5/fulltext

Knowledge, attitude, and practice of stroke patients' family members towards stroke rehabilitation: A cross-sectional study

Journal of Stroke and Cerebrovascular Diseases

https://www.strokejournal.org/article/S1052-3057(24)00620-7/fulltext

Nutritional care in rehabilitation and acute care of stroke patients: a systematic review of clinical practice guidelines

Frontiers in Stroke

https://www.frontiersin.org/journals/stroke/articles/10.3389/fstro.2025.1558019/full

Group versus individual delivery of upper limb intervention for adults post-stroke: A systematic review and meta-analysis

Clinical Rehabilitation

https://journals.sagepub.com/doi/10.1177/02692155251322999

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1. **Astrocytes: Therapeutic targets for stroke**

Authors: Li, Jingxiu;Gao, Keyuan;Wang, Lili;Wang, Jiayue;Qin, Mian;Wang, Xinrui;Lian, Kai;Li, Chao;Gao, Shan'e and Sun, Chenxi

Publication Date: 2026

Journal: Neural Regeneration Research 21(3), pp. 1074–1088

Abstract: Stroke is the leading cause of mortality globally, ultimately leading to severe, lifelong neurological impairments. Patients often suffer from a secondary cascade of damage, including neuroinflammation, cytotoxicity, oxidative stress, and mitochondrial dysfunction. Regrettably, there is a paucity of clinically available therapeutics to address these issues. Emerging evidence underscores the pivotal roles of astrocytes, the most abundant glial cells in the brain, throughout the various stages of ischemic stroke. In this comprehensive review, we initially provide an overview of the fundamental physiological functions of astrocytes in the brain, emphasizing their critical role in modulating neuronal homeostasis, synaptic activity, and blood-brain barrier integrity. We then delve into the growing body of evidence that highlights the functional diversity and heterogeneity of astrocytes in the context of ischemic stroke. Their well-established contributions to energy provision, metabolic regulation, and neurotransmitter homeostasis, as well as their emerging roles in mitochondrial recovery, neuroinflammation regulation, and oxidative stress modulation following ischemic injury, are discussed in detail. We also explore the cellular and molecular mechanisms underpinning these functions, with particular emphasis on recently identified targets within astrocytes that offer promising prospects for therapeutic intervention. In the final section of this review, we offer a detailed overview of the current therapeutic strategies targeting astrocytes in the treatment of ischemic stroke. These astrocyte-targeting strategies are categorized into traditional small-molecule drugs, microRNAs (miRNAs), stem cell-based therapies, cellular reprogramming, hydrogels, and extracellular vesicles. By summarizing the current understanding of astrocyte functions and therapeutic targeting approaches, we aim to highlight the critical roles of astrocytes during and after stroke, particularly in the pathophysiological development in ischemic stroke. We also emphasize promising avenues for novel, astrocyte-targeted therapeutics that could become clinically available options, ultimately improving outcomes for patients with stroke.

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2. **Exosomes in stroke management: A promising paradigm shift in stroke therapy**

Authors: Wang, Bo;Chen, Pinzhen;Li, Wenyan and Chen, Zhi

Publication Date: 2026

Journal: Neural Regeneration Research 21(1), pp. 6–22

Abstract: Effective treatment methods for stroke, a common cerebrovascular disease with a high mortality rate, are still being sought. Exosome therapy, a form of acellular therapy, has demonstrated promising efficacy in various diseases in animal models; however, there is currently insufficient evidence to guide the clinical application of exosome in patients with stroke. This article reviews the progress of exosome applications in stroke treatment. It aims to elucidate the significant potential value of exosomes in stroke therapy and provide a reference for their clinical translation. At present, many studies on exosome-based therapies for stroke are actively underway. Regarding preclinical research, exosomes, as bioactive substances with diverse sources, currently favor stem cells as their origin. Due to their high plasticity, exosomes can be effectively modified through various physical, chemical, and genetic engineering methods to enhance their efficacy. In animal models of stroke, exosome therapy can reduce neuroinflammatory responses, alleviate oxidative stress damage, and inhibit programmed cell death. Additionally, exosomes can promote angiogenesis, repair and regenerate damaged white matter fiber bundles, and facilitate the migration and differentiation of neural stem cells, aiding the repair process. We also summarize new directions for the application of exosomes, specifically the exosome intervention through the ventricular-meningeal lymphatic system. The review findings suggest that the treatment paradigm for stroke is poised for transformation. (Copyright © 2024 Neural Regeneration Research.)

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3. **Optimizing Stroke Care Transitions: A Patient-Centered Discharge Program for Caregivers**

Authors: Bhatt, Anshika;Kaur, Sukhpal;Dhandapani, Manju;Banumathy, N. and Khurana, Dheeraj

Publication Date: 2025

Journal: Home Health Care Management & Practice 37(3), pp. 191–201

Abstract: Inadequate discharge planning can worsen long-term outcomes for patients with stroke, delaying their recovery. Equipping caregivers with the knowledge to manage rehabilitation needs is crucial for facilitating a smooth hospital-to-home transition. The study aims to assess the effectiveness of a "Patient-Centered Discharge Program for Caregivers" on the comprehensiveness and clarity of discharge advice provided to caregivers of stroke survivors. Using a quasi-experimental design, the study compared a control group receiving standard discharge planning and an experimental group receiving the "Patient-Centered Discharge Program for Caregivers." 62 caregivers of stroke survivors formed the participant pool. The program focused on various comprehensive discharge advice domains delivered to the caregivers. The discharge advice, knowledge, and skills of caregivers regarding stroke care were assessed on the day of discharge through questionnaires and checklists. Compared to the control group, the discharge instructions of the experimental group became more comprehensive and clear, with a significant improvement in knowledge and skills regarding stroke care ($p < .05$). The knowledge scores of the caregivers showed a statistically significant difference from the control group, with a mean difference of 8.78. ($p < .05$). The experimental group demonstrated good skills in nearly all procedures compared to the control group, including oral care, range of motion exercises, feeding, suctioning, and back care ($p < .05$). The

"Patient-Centered Discharge Program for Caregivers" led to the delivery of more comprehensive discharge instructions, subsequently increasing caregivers' knowledge. It highlights the benefits of such programs in equipping caregivers for effective discharge planning, with future research needed to evaluate long-term benefits. Trial/Protocol Registration : Clinical Trials Registry India (CTRI) CTRI/2023/07/055602 Link:https://ctri.nic.in/Clinicaltrials/rmaindet.php?trialid=89913&EncHid=35558.64662&modid=1&compid=19

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4. **Association between frailty and the progression trajectories of stroke and dementia comorbidity: insights from observational and genetic analyses**

Authors: Chen, Dongze;Zhang, Yali;Ji, Zhiqiang;Zhou, Yi and Liang, Zhisheng

Publication Date: 2025

Journal: Archives of Gerontology & Geriatrics 134, pp. N.PAG

Abstract: • Frail status was associated with higher risk of transitioning from stroke to stroke-dementia comorbidity. • Mendelian randomization analyses supported a potential causal association between frailty and stroke-dementia comorbidity. • Population attributable risk analysis identified hypertension, diabetes, lung disease, and visual impairment as significant contributors to the risk of progression from stroke/dementia to stroke-dementia comorbidity. The relationship between frailty and the progression trajectories of stroke-dementia comorbidity remains inconclusive. This study aimed to determine whether there are associations between frailty and the progression trajectories of stroke-dementia comorbidity, including the transitions from enrollment to incident stroke/dementia, progression to stroke-dementia comorbidity, and ultimately to mortality. This prospective study was conducted based on the UK Biobank cohort. Frailty was assessed using the frailty index (FI) and categorized as robust (FI ≤ 0.10), prefrail (0.10 0.25). We used multi-state models and one-sample Mendelian randomization (MR) to investigate the relationships between frailty and the progression trajectories of stroke-dementia comorbidity. Population attributable fraction (PAF) analyses were conducted to assess the attributable risks of frailty and its components. The final analysis included 459,924 participants. In comparison to the robust, the frail group significantly elevated the risk of transitioning from enrollment to stroke HR(95 %CI): 2.32(2.19–2.45)], from enrollment to dementia 2.56(2.31–2.83)], from enrollment to mortality 2.32(2.23–2.42)], from stroke to stroke-dementia comorbidity 1.59(1.23–2.05)], from dementia to stroke-dementia comorbidity 1.79(1.29–2.48)], and from stroke to mortality 1.25(1.11–1.40)]. MR analyses revealed that genetically predicted FI was causally associated with higher risks of stroke-dementia comorbidity. PAF analyses indicated that hypertension, diabetes, lung disease, and visual impairment were significant contributors to the risk of progression to stroke-dementia comorbidity. Our findings revealed that frailty status increases the risk of post-stroke dementia, offering important insights for the clinical management and public health strategies. Display omitted]

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5. **Neighborhood socio-demographic profile associated with adequate transitions of stroke care: The transitions of care stroke disparities study**

Authors: Fakoori, Farya;Zhou, Lili;Gardener, Hannah;Gutierrez, Carolina;Asdaghi,

Negar;Bishop, Lauri;Brown, Scott C.;Campo-Bustillo, Iszet;Gordon Perue, Gillian;Johnson, Karlon H.;Veledar, Emir;Ying, Hao;Romano, Jose G.;Rundek, Tatjana and Marulanda, Erika

Publication Date: 2025

Journal: Journal of Stroke & Cerebrovascular Diseases 34(7), pp. N.PAG

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6. **Factors associated with upper extremity use after stroke: a scoping review of accelerometry studies**

Authors: Gagné-Pelletier, Léandre;Poitras, Isabelle;Roig, Marc and Mercier, Catherine

Publication Date: 2025

Journal: Journal of NeuroEngineering & Rehabilitation (JNER) 22(1), pp. 1–17

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7. **Poverty and Stroke: The Need for Socioeconomic Data in Hyperacute Care**

Authors: Goyal, Mayank;Hill, Michael D.;Saver, Jeffery L. and Singh, Nishita

Publication Date: 2025

Journal: Stroke (00392499) 56(7), pp. 1965–1968

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8. **Exploring perspectives on the management of patients with complex care needs in stroke rehabilitation: An interpretive description study**

Authors: Indar, Alyssa;Nelson, Michelle;Berta, Whitney and Mylopoulos, Maria

Publication Date: Jul ,2025

Journal: Health Care Management Review 50(3), pp. 185–196

Abstract: Background: Exploring the "wicked" problem of improving care for patients with complex care needs could benefit a large swath of health system stakeholders given the breadth and depth of this issue. Patients with complex health and social needs often require customized care that deviates from expected care trajectories. At Canadian Stroke Distinction sites, clinicians provide care for a high proportion of patients with complex needs while adhering to best practice recommendations. Methods: We conducted an interpretive description study, which explored the perspectives of 16 stroke rehabilitation clinicians, four organizational key informants, and two health system key informants. We collected data via 45- to 60-minute virtual interviews and engaged in a hybrid inductive–deductive approach to analysis. Results: We constructed three main themes: (a) recognizing complexity is routine work for clinicians, (b) clinicians use workarounds to manage complexity, and (c) clinicians perceived and worked to bridge a difference between organizational processes and the realities of patient care. When comparing clinician and key informant perspectives, we noted

differences regarding their perceptions of the prevalence and nature of patient complexity. We developed the concept of "work-as-expected" as an intermediary to bridge the gap between the "work-as-imagined" and "work-as-done" framework. Conclusion: We describe the strategies used by expert clinicians to continually manage care for a high proportion of patients with complex care needs. Although expert clinicians have developed effective workarounds, they experience significant moral distress when these strategies are unable to compensate for health system limitations. Practice Implications: A better understanding of how clinicians manage the needs of patients with complex care needs could support policymakers and organizational leaders to consider macro- and meso-level strategies to support the adaptive practices of clinicians.

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9. **Effects of cardiorespiratory physiotherapy on lung function in stroke: a network meta-analysis**

Authors: Kim, So-Hyun and Cho, Sung-Hyoun

Publication Date: 2025

Journal: Topics in Stroke Rehabilitation 32(5), pp. 459–471

Abstract: Background: The efficacy of various physiotherapy interventions for improving lung function has not been compared. Objectives: To evaluate cardiorespiratory physiotherapy interventions on lung function in patients with stroke, prioritize intervention types, and establish hierarchy. Methods: Twelve randomized controlled trials published during 2000–2022 in PubMed, EMBASE, Cochrane Library, and Web of Science were selected. Interventions included aerobic training (AT), combined inspiratory and expiratory training (CIET), inspiratory training (IT), combined aerobic and breadth training (CABT), and conventional training (CT). Outcome variables were forced expiratory volume in 1 s (FEV1), forced vital capacity (FVC), and FEV1/FVC. Results: CIET and IT were more effective than CT for FEV1 and FVC. CIET and IT showed larger effect sizes compared to AT for FEV1. The intervention rankings were as follows: IT (86.62%), CIET (63.31%), CABT (50.79%), AT (28.72%), and CT (20.55%) for FEV1; IT (93.89%), CIET (75.06%), CT (42.38%), CABT (37.73%), and AT (0.94%) for FVC; and IT (78.30%), CT (54.14%), CABT (42.62%), CIET (41.65%), and AT (33.29%) for FEV1/FVC. CIET and IT were more effective than CT for FVC in patients with stroke aged ≥60 years. Conclusions: Besides FEV1/FVC, IT and CIET inhalation exercises improved lung function more effectively than other therapies, with IT or CIET being more effective than AT or CT. CIET and IT were more effective than CT for FVC in patients with stroke aged ≥60 years than in those <60 years. These findings highlight the significance of breathing training for patients with stroke and support clinical decision-making.

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10. **Does acupuncture combined with MOTOmed movement therapy have a better rehabilitation effect on post-stroke hemiplegia patients? A systematic review and meta-analysis**

Authors: Li, Zhongyuan;Hou, Yufei;Su, Guiting;Tu, Shuzhen and Liu, Fang

Publication Date: 2025

Journal: Topics in Stroke Rehabilitation 32(5), pp. 512–530

Abstract: Background: Combinations of rehabilitation therapies are widely used in patients with post-stroke hemiplegia. A combination of acupuncture and MOTOmed had been shown to promote the recovery of post-stroke hemiplegia patients. We conducted a systematic review of evidence from studies that investigated the use of acupuncture combined with MOTOmed for rehabilitation of patients with post-stroke hemiplegia. Objective: To estimate the rehabilitation effect of acupuncture combined with MOTOmed movement therapy in patients with post-stroke hemiplegia. Methods: Randomized controlled trials (RCTs) of acupuncture combined with MOTOmed movement therapy in patients with post-stroke hemiplegia were retrieved from nine databases. Risk-of-bias assessments were conducted using the Cochrane Risk-of-bias Tool. Meta-analysis of outcome measures was performed using RevMan 5.4 software. And we followed the PRISMA 2020 guidelines. Results: Eighteen studies involving 1637 participants were included. Compared with conventional rehabilitation, acupuncture, or MOTOmed movement therapy alone, acupuncture combined with MOTOmed movement therapy increased the scores of Fugl-Meyer Assessment Scale-lower extremity (FMA-LE), Berg Balance Scale (BBS), Functional Ambulation Categories scale (FAC), Maximal Walking Speed test (MWS), gait parameters of 3D gait analysis, Barthel Index (BI), Modified Barthel Index (MBI), total effective rate, and the levels of neurotrophic factors (NGF, BDNF and NT-3) in serum, while reduced the scores of Clinic Spasticity Index (CSI) and National Institutes of Health Stroke Scale-Lower Extremity (NIHSS-LE) ($p < 0.05$ for all). Conclusion: Acupuncture combined with MOTOmed movement therapy has better efficacy than conventional rehabilitation, acupuncture, or MOTOmed alone in patients with post-stroke hemiplegia. This combination therapy can promote the rehabilitation of these patients.

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11. **Backward walking training is as effective as or better than forward walking training for improving walking speed after stroke: a systematic review with meta-analysis**

Authors: Menezes, Kênia Kp;Avelino, Patrick R.;Ada, Louise and Nascimento, Lucas R.

Publication Date: 2025

Journal: Topics in Stroke Rehabilitation 32(5), pp. 531–543

Abstract: Objective: In people who have had stroke, are the effects of backward walking comparable with forward walking for improving walking (i.e. speed, cadence, and stride length)? Does the addition of backward walking to forward walking help improve the benefits of forward walking? Are any benefits maintained beyond intervention? Methods: A systematic review of randomized trials, with adults following stroke, was developed. The intervention of interest was backward walking training, delivered either as a solo intervention or in combination with forward walking training. The outcome measures of interest were walking speed, cadence, and stride length. Results: The effect of backward walking training is similar as or better than that of forward walking training for improving walking speed (MD 0.16 m/s, 95% CI 0.06 to 0.27), but results for cadence and stride length were very imprecise. The addition of backward walking training to forward walking training provided negligible effects on walking speed (MD 0.03 m/s, 95% CI 0.01 to 0.04), cadence (MD 5 steps/min, 95% CI 1 to 10), and stride length (MD 0.04 m, 95% CI −0.01 to 0.09). Maintenance of effects beyond the intervention period remains uncertain. Conclusions: This review provided moderate-quality

evidence that backward walking training is slightly better than forward walking training for improving walking speed after stroke, but not when it is additional to forward walking training. Large and well-designed trials are warranted to strengthen the evidence regarding backward walking training, especially in the subacute phase after stroke.

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12. **Narrative production and executive functions in post-stroke agrammatic aphasia**

Authors: Peristeri, Eleni;Nerantzini, Michaela;Drakoulaki, Katerina;Boznou, Antonia and Varlokosta, Spyridoula

Publication Date: 2025

Journal: Aphasiology 39(7), pp. 918–941

Abstract: Background: Narrative production has been widely characterized as providing an ecologically valid way to assess language skills in post-stroke aphasia. Although narrative tasks have been instrumental in delineating patterns of lexical and syntactic production in individuals with agrammatic aphasia, our knowledge of how narrative skills are affected in agrammatic aphasia is still limited. Aims: The study's aims were to (a) compare narrative performance between individuals with agrammatic aphasia and a language-unimpaired group, (b) investigate the contribution of lexical and syntactic skills in each group's narrative organizational skills, and (c) explore the effects of executive functions on each group's narrative performance. Methods & Procedures: The study included 14 individuals with agrammatic aphasia and 14 age- and education-matched language unimpaired individuals as the control group. Both groups told the Cinderella story, and their narrative production was analyzed in terms of microstructure (lexical diversity, syntactic complexity, clause length) and macrostructure (story grammar, story structure complexity). Each group's executive functions were evaluated through the One-Touch Stockings of Cambridge test that assesses working memory, and the Intra-Extra Dimensional Set Shift test that assesses cognitive flexibility. Outcomes & Results: Regarding narrative microstructure, the individuals with agrammatism scored significantly lower than controls in syntactic complexity and clause length, but not in lexical diversity, but they performed lower than controls in both narrative macrostructural measurements. Also, the agrammatic group scored lower than controls in both executive function tasks. A series of linear regression models showed that microstructural skills significantly affected narrative macrostructural abilities in the cohort with agrammatic aphasia, while controls' macrostructure was affected by both narrative microstructure and executive function skills. Conclusions: The individuals with agrammatic aphasia exhibited impairment in both low-level language features of narrative production, such as syntactic complexity and narrative length, and global measures of narrative organization. Their macrostructural performance critically relied on their language resources, while controls' narrative macrostructure seemed to also draw on domain-general cognitive skills. These findings suggest that both low-level language and high-level discourse organizational skills are vulnerable in narrative production in agrammatic aphasia, and that macrostructural skills are mainly related to the individuals' microstructural skills.

13. **Antithrombotic therapy for secondary stroke prevention in patients with cancer: a systematic review and network meta-analysis**

Authors: Pipek, Leonardo Zumerkorn;Nascimento, Rafaela Farias Vidigal;Coronel, Sabrina Isabel;Baker, Mark;Basto, Fernando Mayor and Silva, Guilherme Diogo

Publication Date: 2025

Journal: European Journal of Clinical Pharmacology 81(7), pp. 1001–1015

Abstract: Background: The risk of stroke among patients with cancer is two times that of the general population due to a combination of cancer-, chemotherapy-, radiotherapy-, and surgery-related factors. There is a paucity of data regarding the optimal antithrombotic therapy for secondary stroke prevention in these patients. Objectives: Our goal was to review the stroke recurrence in patients treated with different antithrombotic therapies (antiplatelets, warfarin, heparin, and direct oral anticoagulants). Our secondary objective was to review the bleeding risk across different antithrombotic therapies. Methods: A review of the literature was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Articles that adequately assessed secondary prevention of stroke in patients with cancer were selected from the PubMed, Embase, and Scopus databases from inception until March 2, 2025. We performed a network meta-analysis for stroke recurrence, major bleeding, and mortality. The treatments were ranked by P-SCORE. Subgroup analyses were conducted based on median D-dimer levels, multiple territories of stroke, and exclusion of studies with high risk of bias. Results: We included 11 studies (four RCTs, six retrospective studies, and one case series) with a total of 1319 patients. In the primary analysis, antiplatelets were the highest-ranked treatment for reducing stroke recurrence (RR 0.44 0.20; 0.96]), followed by LMWH (RR 0.50 0.26; 0.96]), both significantly superior to no treatment. However, LMWH consistently ranked higher than antiplatelets in all subgroup analyses. There was no difference regarding major bleeding or mortality. Conclusion: Antiplatelets can be considered an option for secondary prevention of stroke in patients with cancer, especially in patients with a higher bleeding risk. Future research with high-quality studies is needed to confirm our preliminary findings and should focus on identifying subgroups of patients with cancer who may benefit most from specific antithrombotic therapies.

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14. **Implementation of a patient decision aid for discharge planning of hospitalized patients with stroke: aprocess evaluation using a mixed-methods approach**

Authors: Prick, J. C. M.;Engelhardt, E. G.;Lansink Rotgerink, F. K.;Deijle, I. A.;van Schaik, S. M.;Garvelink, M. M.;Dahmen, R.;Brouwers, P. J. A. M.;van Uden, I. W. M.;van der Wees, P. J.;Van den Berg-Vos, R. M. and van Uden-Kraan, C. F.

Publication Date: 2025

Journal: Patient Education & Counseling 136, pp. N.PAG

15. **A systematic review and meta-analysis of acupuncture's impact on hemiplegic gait recovery after stroke**

Authors: Sun, Zheng;Sun, Haitian;Yu, Kuang;Zhu, Zilong;Lin, Yiren;Sun, Ke and Zhang, Jianbin

Publication Date: 2025

Journal: Complementary Therapies in Medicine 91, pp. N.PAG

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16. **Overground robotic exoskeleton vs conventional therapy in inpatient stroke rehabilitation: results from a pragmatic, multicentre implementation programme**

Authors: Tam, Pui Kit;Tang, Ning;Kamsani, Nur Shafawati Binte;Yap, Thian Yong;Coffey-Aladdin, Ita;Goh, Shi Min;Tan, Jean Pei Pei;Lui, Yook Cing;Lee, Rui Ling;Suresh, Ramaswamy and Chew, Effie

Publication Date: 2025

Journal: Journal of NeuroEngineering & Rehabilitation (JNER) 22(1), pp. 1–9

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17. **'Smart reminder': A feasibility pilot study on the effects of a wearable device treatment on the hemiplegic upper limb in persons with stroke**

Authors: Toh, Fong Mei;Lam, Winnie W. T.;Gonzalez, Pablo Cruz and Fong, Kenneth N. K.

Publication Date: 2025

Journal: Journal of Telemedicine & Telecare 31(6), pp. 796–806

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18. **Endovascular therapy versus best medical care for acute ischemic stroke with distal medium vessel occlusion: a systematic review and meta-analysis**

Authors: Wang, Ziyue;Li, Jiacheng;Kong, Qianqian;Yan, Hao;Zhang, Yi;Zhou, Xirui;Yu, Zhiyuan;Huang, Hao and Luo, Xiang

Publication Date: 2025

Journal: Annals of Medicine 57(1), pp. 2447407

Abstract: Background: With the refinement of catheter technology, distal medium vessel occlusions (DMVOs) are now viewed as amenable to endovascular treatment (EVT) but its efficacy and safety remains unclear in AIS patients with DMVO.; Methods: We conducted a systematic search of PubMed, Embase databases and Cochrane Library up to December 2023 using keywords to identify studies comparing EVT versus BMT in AIS with DMVOs. The assessed clinical outcomes were excellent functional outcome, good functional outcome, 90-day mortality, symptomatic intracranial hemorrhage (sICH), and early neurological

improvement (ENI) after treatment.; Results: Overall, 31 studies were included. There were no significant differences in excellent functional outcome (OR: 1.21, 95% CI: 0.99-1.47), good functional outcome (OR: 1.03, 95% CI: 0.82-1.30) and 90-day mortality (OR: 1.17, 95% CI: 0.84-1.62). Additionally, EVT led to higher sICH (OR: 1.64, 95% CI: 1.09-2.47) and better ENI (OR: 1.50, 95% CI: 1.02-2.19) compared to BMT. In individuals with M2 occlusion receiving EVT showed better excellent functional outcomes (OR: 1.48, 95% CI: 1.07-2.03). Those patients with PCA occlusion showed no significant difference in functional outcomes. In individuals with ACA occlusion, EVT resulted in reduced functional independence (OR: 0.55, 95% CI: 0.31-0.98). For NIHSS < 6, BMT achieved better functional independence compared to EVT (OR: 0.71, 95% CI: 0.51-0.98) and EVT showed higher sICH (OR: 3.44, 95% CI: 1.42-8.31).; Conclusion: For patients with AIS and DMVO occlusion, EVT fails to improve functional prognosis while increasing sICH incidence. More randomized controlled trials are needed in the future to confirm these results.

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19. **Research progress in the use of botulinum toxin type a for post-stroke spasticity rehabilitation: a narrative review**

Authors: Xu, Qianwen;Xiao, Hongbo;Zhu, Zongjun;Guan, Yuanyuan and Wang, Ya

Publication Date: 2025

Journal: Annals of Medicine 57(1), pp. 2521427

Abstract: Background: Stroke is a leading cause of long-term disability and death worldwide. Spasticity after stroke seriously affects patients' quality of life. If this state persists for a long time, it will lead to severe joint atrophy, reduced motor coordination, and even permanent disability. Therefore, clinical research has focused on the treatment of spasticity and the recovery of motor function after stroke.; Aim: The aim of this paper is to explore the use of botulinum toxin type A in the rehabilitation of spasticity after stroke and to provide a theoretical basis for optimizing rehabilitation strategies, highlighting its potential value in reducing spasticity and improving motor function.; Method: This article reviews the latest research progress on the application of BTX-A in spasticity after stroke, discusses the potential and challenges of BTX-A in reducing spasticity and improving motor function in patients with stroke.; Result: Botulinum toxin type A (BTX-A) is a local muscle paralytic agent that has received extensive attention in recent years for its application in reducing muscle spasticity and promoting post-stroke rehabilitation.; Conclusion: This article confirms that botulinum toxin type A has a significant clinical effect in treating muscle spasticity after stroke and also helps improve motor function restoration in patients. Studies have shown that botulinum toxin type A injections are effective in reducing spasticity and, when combined with rehabilitation training, can facilitate the recovery of motor function in post-stroke patients. Therefore, botulinum toxin type A has a broad application prospect in the rehabilitation of post-stroke spasticity.

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