

### **Stroke**

# **Current Awareness Bulletin**

## **April 2025**

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1. Investigating the effect of illness perception on motor function in cardioembolic stroke patients using the fear-avoidance model: The mediating role of kinesiophobia

Authors: Ding, Yunmei; Yue, Shouwei; Li, Jing; Wang, Lu; Gu, Jianyu and Cui, Yan

**Publication Date: 2025** 

Journal: Heart & Lung

Abstract: • Illness perception can influence motor function in patients with atrial fibrillationrelated cardioembolic stroke. • Illness perception can influence kinesiophobia in atrial fibrillation-associated cardioembolic stroke. • Kinesiophobia affects motor function in atrial fibrillation-related cardioembolic stroke. • The fear-avoidance model explains the mediating role of kinesiophobia in moderating the relationship between illness perception and motor function. Cardioembolic stroke is the most common cause of ischemic stroke, and patients frequently have motor dysfunction as well as psychological disorders. Both physical and psychological causes can have an impact on a patient's motor function. In this study, we used the fear-avoidance model to examine the impact of patients' illness perception and kinesiophobia (excessive fear of exercise) on their motor function. Between June 2021 and February 2022, we conducted a cross-sectional study of 319 participants diagnosed with cardioembolic stroke in the selected hospitals. Correlation analyses and mediation effects tests were used to analyze the relationship between patients' illness perception, kinesiophobia, and motor function. The total motor function score of the patients was  $(21.39 \pm 29.30)$ , the total kinesiophobia score was (48.51  $\pm$  8.33), and the total illness perception score was (53.37  $\pm$ 16.82). There was a negative correlation between illness perception and motor function (r = -0.734, P < 0.001), a negative correlation between kinesiophobia and motor function (r = -

0.522, P < 0.001), and a positive correlation between illness perception and kinesiophobia (r = 0.508, P < 0.001); kinesiophobia played a mediating role between illness perception and motor function ( $\beta$  = -0.63, P < 0.001). The findings revealed that individuals with cardioembolic strokes had poor motor function, as well as negative illness perception and kinesiophobia. Negative illness perception had a direct impact on patients' motor function as well as an indirect effect via kinesiophobia. The fear-avoidance model contributes to understanding the process of reduced motor function in cardioembolic stroke patients. Display omitted]

## 2. 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

3. Effect of electrical stimulation in the treatment on patients with foot drop after stroke: a systematic review and network meta-analysis

Authors: He, Wang; Yaning, Li and Shaohong, Yu

**Publication Date: 2025** 

Journal: Journal of Stroke & Cerebrovascular Diseases

4. Neuroimaging predictors of malignant brain oedema after thrombectomy in ischemic stroke: a systematic review and meta-analysis

**Authors:** Huang, Linrui;Song, Xindi;Li, Jingjing;Wang, Yanan;Hua, Xing;Liu, Meng;Liu, Ming and Wu, Simiao

**Publication Date: 2025** 

Journal: Annals of Medicine

**Abstract:** Background: We systematically reviewed neuroimaging predictors for malignant brain oedema (MBE) after thrombectomy in patients with ischemic stroke.; Methods: We searched MEDLINE and EMBASE in November 2023 for studies of patients with ischemic stroke. We included studies investigating neuroimaging predictors or prediction models for MBE after thrombectomy. We estimated effect size for the association between predictors and MBE by odds ratios (ORs) or standardized mean differences (SMDs), and pooled results using random-effects modelling.; Results: We included 19 studies (n = 6007) with 17 neuroimaging factors and 5 models. Lower Alberta Stroke Program Early CT scores (ASPECTS, n = 3052, SMD -1.84, 95% CI -2.52 - -1.16; df = 9) and longer extent of arterial occlusion at baseline

were associated with higher risk of MBE. Post-thrombectomy ASPECTS was associated with MBE in general stroke patients ( n=453, SMD -2.91, -4.02 - -1.79; df = 1), but not in successfully reperfused patients ( n=110, SMD 0.24, -0.16 - 0.65). Successful reperfusion reduced risk of MBE ( n=4851, OR 0.39, 0.30-0.51; df = 13). Contrast enhancement on CT after thrombectomy was associated with higher risk of MBE ( n=998, OR 4.82, 2.53-9.20; df = 4). More reserved brain volume capacity (baseline: n=683, OR 0.83, 0.77-0.91, p<.001; post-thrombectomy: n=329, OR 0.53, 0.37-0.77, p<.001) and good collaterals (baseline: n=2301, OR 0.14, 0.10-0.20, df = 3; post-thrombectomy: n=1006, OR 0.28, 0.15-0.51; df = 2) were associated with lower risk of MBE.; Conclusion: Lower ASPECTS and longer arterial occlusion at baseline, and post-thrombectomy CT contrast enhancement increased risk of MBE. Reperfusion after thrombectomy, more reserved brain volume and good collaterals at baseline and post-thrombectomy reduced its risk.

## 5. Development and validation of an interpretable machine learning model for predicting in-hospital mortality for ischemic stroke patients in ICU

**Authors:** Luo, Xiao;Li, Binghan;Zhu, Ronghui;Tai, Yaoyong;Wang, Zongyu;He, Qian;Zhao, Yanfang;Bi, Xiaoying and Wu, Cheng

**Publication Date: 2025** 

Journal: International Journal of Medical Informatics

**Abstract:** Competing Interests: Declaration of competing interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.; Background: Timely and accurate outcome prediction is essential for clinical decision-making for ischemic stroke patients in the intensive care unit (ICU). However, the interpretation and translation of predictive models into clinical applications are equally crucial. This study aims to develop an interpretable machine learning (IML) model that effectively predicts in-hospital mortality for ischemic stroke patients.; Methods: In this study, an IML model was developed and validated using multicenter cohorts of 3225 ischemic stroke patients admitted to the ICU. Nine machine learning (ML) models, including logistic regression (LR), K-nearest neighbors (KNN), naive Bayes (NB), decision tree (DT), support vector machine (SVM), random forest (RF), XGBoost, LightGBM, and artificial neural network (ANN), were developed to predict in-hospital mortality using data from the MIMIC-IV and externally validated in Shanghai Changhai Hospital. Feature selection was conducted using three algorithms. Model's performance was assessed using area under the receiver operating characteristic (AUROC), accuracy, sensitivity, specificity and F1 score. Calibration curve and Brier score were used to evaluate the degree of calibration of the model, and decision curve analysis were generated to assess the net clinical benefit. Additionally, the SHapley Additive exPlanations (SHAP) method was employed to evaluate the risk of inhospital mortality among ischemic stroke patients admitted to the ICU.; Results: Mechanical ventilation, age, statins, white blood cell, blood urea nitrogen, hematocrit, warfarin, bicarbonate and systolic blood pressure were selected as the nine most influential variables. The RF model demonstrated the most robust predictive performance, achieving AUROC values of 0.908 and 0.858 in the testing set and external validation set, respectively. Calibration curves also

revealed a high consistency between observations and predictions. Decision curve analysis showed that the model had the greatest net benefit rate when the prediction probability threshold is  $0.10 \sim 0.80$ . SHAP was employed to interpret the RF model. In addition, we have developed an online prediction calculator for ischemic stroke patients.; Conclusion: This study develops a machine learning-based calculator to predict the probability of in-hospital mortality among patients with ischemic stroke in ICU. The calculator has the potential to guide clinical decision-making and improve the care of patients with ischemic stroke by identifying patients at a higher risk of in-hospital mortality. (Copyright © 2025 Elsevier B.V. All rights reserved.)

## 6. Nurses' Descriptions of Interdisciplinary Interactions in Stroke and Geriatric Rehabilitation Units: A Case Example of the Registered Practical Nurse

Authors: Masood, Mehvish; Guitar, Nicole A.; Connelly, Denise M. and Nguyen, Angela

**Publication Date: 2025** 

Journal: Journal of Advanced Nursing (John Wiley & Sons, Inc.)

**Abstract:** Aim: To analyse how nurses describe their interactions with other interdisciplinary team members within stroke and geriatric rehabilitation. Design: A secondary analysis of cross-sectional ethnographic interview data was conducted using Elo and Kyngäs' (2008) deductive content analysis. Methods: Between April 12 and July 25, 2022, semi-structured interviews were conducted with 31 registered practical nurses recruited through convenience sampling from three tertiary hospital sites in Southwestern Ontario. Interview transcripts were reviewed to identify described interactions between nurses and interdisciplinary team members and were coded for: who were the interdisciplinary team member(s) involved; what content was addressed; and where, when, and why the interaction occurred. Results: Categories representing how nurses describe their interactions with interdisciplinary team members were as follows: (1) arising from the unique roles owned by either the nurse or interdisciplinary team member(s); (2) requiring open communication to achieve patient goals and improve patient care; (3) occurring within what is perceived to be either the therapists' or nurses' physical space; and (4) contributing to supportive team environments that are mutually beneficial. Conclusions: While nurses view other interdisciplinary team members as 'owning' certain roles and physical spaces within rehabilitation, they also recognised their 'owned' spaces and roles. Unique contributions of all team members were valued as necessary to provide holistic, person-centred patient care and positive team-based support. Implications for the Profession and/or Patient Care: Nurses' descriptions of their interactions with interdisciplinary team members demonstrated their essential contributions to team-based patient care and acknowledged nurse contributions to the rehabilitation process for patients. Impact: Findings elucidate the nature of interprofessional interactions and 'ownership' within the rehabilitation process. Results are beneficial for policymakers, educators, and healthcare organisations aiming to optimise the nursing role within rehabilitation spaces. Reporting Method: The Consolidated Criteria for Reporting Qualitative Research Checklist (COREQ). Patient or Public Contribution: No patient or public contribution.

#### 7. Stroke at the Hairdresser's chair: A scoping review of the beauty parlor stroke syndrome

Authors: Mavrovounis, Georgios; Drivas, Konstantinos; Syrakouli, Argyro; Syrakouli, Evangelia; Mermiri, Maria; Papanagiotou, Panagiotis and Pantazopoulos, Ioannis

**Publication Date: 2025** 

Journal: American Journal of Emergency Medicine

#### 8. More intensive versus conservative blood pressure lowering after endovascular therapy in stroke: a meta-analysis of randomised controlled trials

Authors: Naji Mansoor, Ahmed; Choudhary, Vatsalya; Mohammad Nasser, Zain; Jain, Muskan; Dayanand Sharma, Dhruvikumari; Jaramillo Villegas, Mateo; Janarthanam, Sujaritha; Ayyan, Muhammad; Ravindra Nimal, Simran; Ahmad Cheema, Huzaifa; Ehsan, Muhammad; Rehman, Muhammad Aemaz Ur; Nashwan, Abdulgadir and Dani, Sourbha S.

**Publication Date: 2025** 

Journal: Blood Pressure

**Abstract:** Background: The optimum systolic blood pressure (BP) after endovascular thrombectomy for acute ischaemic stroke is uncertain. We aimed to perform an updated metaanalysis of randomised controlled trials (RCTs) to evaluate the safety and efficacy of more intensive BP management compared to less intensive BP management.; Methods: We searched various electronic databases to retrieve relevant RCTs on the clinical effects of more intensive BP management after endovascular thrombectomy compared to the less intensive management. We calculated odds ratios (ORs) with 95% confidence intervals (CIs) for dichotomous outcomes.; Results: Our meta-analysis included four RCTs with a total of 1560 patients. More intensive BP management (<140 mmHg) was associated with a statistically significant decrease in the number of patients showing functional independence (modified Rankin scale mRS] score = 0-2) at 90 days (OR 0.69; CI = 0.51-0.94). Regarding 90-day mortality, our pooled results showed no statistically significant difference between the two groups (OR 1.21; CI = 0.89-1.65). There was no statistically significant difference between the two groups regarding the incidence of intracerebral haemorrhage (ICH) (OR 1.09; CI = 0.85-1.39) and the incidence of symptomatic intracerebral haemorrhage (sICH) (OR 1.11; CI = 0.75-1.65).; Conclusion: According to our meta-analysis, the intensive BP lowering group decreased the number of patients showing functional independence at 90 days. We found no benefit of the intensive lowering of BP on mortality rates and incidence of ICH compared to the conservative BP management. Future large-scale trials should focus on other interventions to improve prognosis in these patients.

#### 9. Homeward Stroke Recovery: Results of a Home Rehabilitation Program

Authors: Rushanan, Scott G.; Giordano, Nicholas A. and Keim, Susan K.

**Publication Date: 2025** 

Journal: Home Health Care Management & Practice

**Abstract:** Evaluate the feasibility of a homeward stroke recovery (HSR) program by measuring functional outcomes, intervention fidelity, and Profit & Loss. A retrospective observational analysis of 23 stroke survivors discharged to a home healthcare (HHC) program offering early and intensive rehabilitative therapy within 24 hours of index hospitalization. Functional outcomes include timed up-and-go, transfer functional independent measures, and Barthel Index. Clinical outcomes are mortality, all-cause 30-day hospital readmission, and fall rates. Process measures consist of time-to-first HHC visit, number of physical therapy (PT) and occupational therapy (OT) visits from initial evaluation, and total number of visits by clinician type. Financial outcomes include average daily gross HSR revenue compared with an inpatient rehabilitation facility (IRF) stay and average daily net HSR profit. Functional outcomes significantly improved across all measures (p < .001) without reported falls, deaths, and only one unrelated readmission. On average, HSR began within 1.6 days from hospital discharge including 4.2 PT and 3.7 OT visits within 5 days of respective initial evaluation. Patients received an average of 9.4 nursing, 9.2 PT, 6.4 OT, and 2.2 speech therapy visits. Exploratory analyses demonstrated similar functional recovery despite longer hospitalization (rs = 0.43; p = .039). Revenue per day was lower for HSR than IRF services but costs exceeded the reimbursement rates for this program. The HSR program is feasible given that patients realized significant functional improvement with negligible consequences. Reimbursement reform is necessary to sustain and scale the program. Further studies with larger sample sizes are warranted.

# 10. What do we need for a successful model of care to promote physical activity after stroke? Results from two web-based surveys of physiotherapists and exercise professionals in Singapore

**Authors:** Scully, Aileen E.;Thilarajah, Shamala;Yuan, Marcus Lee Zhi;Sreeram, A.;Li, Petrina Tang Jia;Wen, Byron Tan Ju;In, Cynthia Tan Miao;Liang, Tan Yi and Khim, Kwah Li

**Publication Date: 2025** 

Journal: Physiotherapy

**Abstract:** Competing Interests: Conflict of Interest None.; Objectives: A collaborative model of care between physiotherapists (PTs) and exercise professionals (EPs) is needed to increase physical activity (PA) after stroke. We investigated the knowledge, attitudes and practices of PA promotion among PTs, the interest of EPs, and the barriers and facilitators to PA promotion faced by PTs and EPs in Singapore.; Design: We conducted two web-based surveys between August and November 2019, and January and July 2021.; Participants: Eligible participants were PTs who saw at least one stroke survivor in the last three months, and certified EPs who saw at least one client in the last six months. We reported categorical data using frequencies

and percentages.; Results: Of 102 PTs and 44 EPs who initiated the surveys, 71 (70%) PTs and 35 (80%) EPs completed the surveys. Most knowledge questions were answered correctly. Almost all PTs perceived PA promotion as part of their role but only half (38/71;54%) practiced this often. Few (11/71;15%) used formal PA assessments. Most used goal setting (66/71;93%), advice/counselling (58/71;82%) and identification of barriers and solutions (51/71;72%). There was great interest from EPs to work with health professionals (30/35;86%) and stroke survivors (28/35;80%). While PTs faced barriers such as lack of time and resources, EPs faced barriers such as lack of referrals, knowledge and skills in stroke and exercise prescription.; Conclusion: Our study identified elements useful for informing a model of care between PTs and EPs in promoting post-stroke PA. Future research should focus on developing resources, pathways and training programs specific to stroke. CONTRIBUTION OF THE PAPER. (Copyright © 2024 Chartered Society of Physiotherapy. Published by Elsevier Ltd. All rights reserved.)

11. 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)

12. Mediating role of the ratio of family income to poverty in the association between depressive symptoms and stroke: Evidence from a large population-based study

Authors: Wang, Mao; Tian, Jiasi; Gao, Yuan; An, Na and Wang, Qiang

**Publication Date: 2025** 

Journal: Journal of Affective Disorders

**Abstract:** Competing Interests: Declaration of competing interest The authors declare no competing interests.; Background: Previous investigations have established a notable correlation between depressive symptoms and stroke incidence, as well as the link between stroke occurrence and the ratio of family income-to-poverty ratio (PIR). The intricate dynamics between depressive states and the incidence of stroke mediated by PIR, however, remains inadequately understood.; Objective: The objective of this research is to scrutinize the link between depressive states and stroke, assessing how PIR functions as a mediator in this dynamic. Through an analysis of the economic status of individuals exhibiting depressive symptoms, this study explores their potential influence on the susceptibility to stroke. Such analysis aims to uncover the intricate interactions among depression, the PIR, and stroke occurrence.; Methods: Data from 2015 to 2018 NHANES assessed adults' depressive

symptoms using PHQ-9 scores. Participants reporting a stroke diagnosis by medical professionals were identified as the stroke cohort. The income levels were assessed using the PIR. To examine the relationship between depressive symptoms and stroke, weighted multivariate linear regression models, curve-fitting analyses, and subgroup assessments were employed, alongside mediation analyses to determine the role of PIR as a mediator.; Results: In the analysis of 7204 participants, the data revealed a robust positive association between depressive symptoms and stroke risk within the comprehensively adjusted model. Additionally, the mediation analysis demonstrated that the PIR contributed to 10.3188 % of the explained variability in the link between depressive symptoms and stroke incidence, serving as a specific mediator of this association.; Conclusion: The findings of this research indicate that there is a significant positive link between depressive symptoms and the incidence of stroke, with the PIR serving as a notable mediator. (Copyright © 2025 Elsevier B.V. All rights reserved.)

## 13. 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

**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, 90day 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.

## 14. Efficacy of high-frequency peripheral magnetic stimulation in treating patients with persistent hiccups post-stroke: A retrospective study

Authors: Zhang, Fengxia; Lei, Yuexiu and Zhang, Zhan

**Publication Date: 2025** 

Journal: Journal of Stroke & Cerebrovascular Diseases

## 15. Depressive symptoms changes in the new-onset stroke patients: A cross-lagged panel network analysis

**Authors:** Zhang, Peijia;Sun, Changqing;Zhu, Zhengqi;Miao, Jixing;Wang, Panpan;Zhang, Qiang;Wang, Lianke;Qin, Ying;Wu, Tiantian;Yao, Zihui;Hu, Bo;Wang, Yu;Xue, Wei and Sun, Dequan

**Publication Date: 2025** 

Journal: Journal of Affective Disorders

16. The efficacy of colchicine compared to placebo for preventing ischemic stroke among individuals with established atherosclerotic cardiovascular diseases: a systematic review and meta-analysis

Authors: Zhu, Shulai; Pan, Weiwei; Yao, Yingjie and Shi, Kai

**Publication Date: 2025** 

Journal: Scandinavian Cardiovascular Journal: SCJ

**Abstract:** Background. Colchicine is an anti-inflammatory drug with promising efficacy for preventing cardiovascular events. We aimed to assess the pooled effect of colchicine on ischemic stroke among patients with established atherosclerotic cardiovascular diseases. Methods . PubMed, Scopus, Web of Science, and the Cochrane Library were systematically searched from the inception to August 5, 2024. A random-effects (DerSimonian-Laird) model was used to conduct this meta-analysis. The inclusion criteria were as follows: (I) being a randomized controlled trial; and (II) measuring the efficacy of colchicine compared to placebo for preventing ischemic stroke among those with established atherosclerotic cardiovascular diseases. Results . We identified 13 eligible clinical trials with 24900 participants. Colchicine significantly decreased the risk of ischemic stroke (relative risk (RR) 0.85, 95% confidence interval (CI) (0.72, 0.99), I 2 =2.92%) among those with established atherosclerotic cardiovascular diseases. Colchicine was more effective when used at 0.5 mg/day (RR 0.86, 95% CI (0.75, 0.99)), prescribed for more than 30 days (RR 0.86, 95% CI (0.75, 1.00)) or for more than 90 days (RR 0.65, 95% CI (0.46, 0.92)), or administered for patients with acute

coronary syndrome (RR 0.46, 95% CI (0.23, 0.92)). In addition, colchicine was more effective in studies with a sample size of more than 500 patients, consistent with sensitivity analysis, which indicated that the results relied on large-sized clinical trials. Conclusion . Colchicine may decrease the risk of ischemic stroke among patients with established atherosclerotic cardiovascular diseases, particularly after long-term use; however, future studies are needed due to inconsistencies between existing trials.

17. Unlocking potential: a bold vision for stroke care in England

**Publication Date: 2025** 

**Stroke Association** 

[Stroke remains one of the greatest health challenges in England today, with increasing rates of stroke incidence and the associated impact on individuals, their loved ones, and the health care system. This report sets out a comprehensive, evidence-based approach to addressing the challenges and inequities in stroke care. It outlines opportunities for improvement across the entire stroke pathway, from prevention and early intervention to stroke rehabilitation and life-after-stroke support.]

#### 18. Al project to improve outcome for stroke patients

**Publication Date: 2025** 

**BBC News** 

Artificial intelligence (AI) is being used to help improve outcomes for stroke patients in Devon. The project SAMueL-2, which stands for stroke audit machine learning, helps to identify which patients can receive a procedure called thrombolysis, which involves administering drugs to break down blood clots. It has analysed a quarter of a million medical records from more than 100 hospitals.

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