

# Stroke

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June 2026

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### 1. Machine learning models for predicting readmission after stroke: A systematic review and meta-analysis

**Authors:** Alajlouni, Yazeed; Zayed, Yousef S.; Nofal, Yousef; Musleh, Ayman and Ghannam, Malik

**Publication Date:** 2026

**Journal:** International Journal of Medical Informatics 216, pp. 106484

**Abstract:** Background: Hospital readmission following stroke poses a significant challenge for healthcare systems. Machine learning (ML) offers the potential to improve prediction models for readmission risk, surpassing traditional statistical methods. However, the performance of ML models in such context has not been systematically evaluated. We aim to evaluate the performance of ML models in predicting post-stroke hospital readmission, as well as identifying the most important readmission predictors.; Methods: A comprehensive systematic literature review and meta-analysis was conducted. Studies included were those utilizing ML models for stroke readmission prediction. The primary outcome was the predictive performance of ML models for all time stroke readmission as reported by the Area Under the Receiver Operating Characteristic Curve (AUROC). Pooled AUROC values were calculated using a random-effects model.; Results: A total of eleven studies involving 380,254 patients were analyzed. Mean age of the patients ranged between 64.5 and 79.7 years. In total, 49 ML models were reported with Logistic regression (LR) and Random Forest being the most used. The number of input predictive variables used for model training ranged from 6 to 10,047. The overall pooled AUROC for predicting hospital readmission was 0.74 (95% CI: 0.69 to 0.78). For 30-day readmission, the pooled AUROC was 0.73 (95% CI: 0.67 to 0.79) while for 90-day readmission, it was 0.75 (95% CI: 0.69 to 0.80). The most frequently reported variables as being top predictors of readmission were Length of stay (LOS) (3 studies), Age (2 studies), National Institutes of Health Stroke Score (NIHSS) (2 studies), HbA1c (2 studies), Homocysteine blood level (2 studies).; Conclusion: Machine learning models demonstrate moderate predictive performance in stroke readmission risk prediction. Future research should focus on validating and refining existing models and adopting unified methodological approaches to aid in drawing more accurate conclusions. (Copyright © 2026. Published by Elsevier B.V.)

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## 2. Collaborative artificial intelligence for the diagnosis and management of acute ischemic stroke

**Authors:** Fan, Zhiqiang;Chen, Qian;Lu, Wang;Yao, Zhu;Yang, Shijie;Zhao, Hongting and Cao, Hua

**Publication Date:** 2026

**Journal:** Annals of Medicine 58(1), pp. 2594356

**Abstract:** Background: Acute Ischemic Stroke (AIS) remains a critical global health challenge that requires continuous improvement in diagnostic strategies. Timely and accurate diagnosis is essential for effective reperfusion therapies such as intravenous thrombolysis and mechanical thrombectomy, whose clinical benefits rapidly diminish with treatment delays. Artificial Intelligence (AI) offers promising potential to enhance diagnostic accuracy and clinical decision-making in AIS. However, data fragmentation and strict privacy regulations limit the development of robust AI systems. Objectives: We aim to provide a perspective-style review that explores how collaborative AI can reshape AIS diagnostics by overcoming data access barriers, fostering cross-institutional model development, and improving diagnostic equity.; Methods: We analysed current challenges in developing AIS-related AI tools, particularly the limitations caused by restricted data sharing across healthcare institutions. The study highlights collaborative AI approaches, such as federated learning and privacy-preserving computation, which enable decentralised model training while maintaining patient confidentiality. Relevant literature and recent developments in clinical AI collaboration were reviewed.; Results: Collaborative AI enables multiple institutions to contribute to model training without exposing raw patient data. This approach improves data diversity, model generalizability, and fairness across healthcare settings. Evidence from multi-centre studies suggests that collaborative AI frameworks can produce more accurate and ethically compliant diagnostic models compared to isolated development efforts.; Conclusions: Collaborative AI presents a transformative pathway for AIS management by balancing data utility and privacy protection. It supports the creation of trustworthy, scalable, and inclusive diagnostic systems. As healthcare systems increasingly adopt digital solutions, collaborative AI provides a foundation for equitable and privacy-conscious innovation in stroke care.

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## 3. Timing matters: early antiplatelet therapy optimizes alteplase treatment in acute ischemic stroke

**Authors:** Gao, Yonglei;Wu, Yubin;Guo, Wei and Wang, Guoqing

**Publication Date:** 2026

**Journal:** Annals of Medicine 58(1), pp. 2610115

**Abstract:** Background: The optimal timing for initiating antiplatelet therapy (APT) after intravenous alteplase in acute ischemic stroke (AIS) remains unclear, due to concerns about intracranial hemorrhage. This study evaluated the safety and efficacy of early APT ( $\leq 24$  h post-alteplase) versus standard APT ( $>24$  h) in AIS patients.; Methods: We conducted a retrospective analysis of 154 AIS patients treated with intravenous alteplase between May 2019 and December 2022. Patients were stratified into early APT (E-APT,  $n = 77$ ) and standard APT (S-APT,  $n = 77$ ) groups. Neurological and functional outcomes were assessed using the National Institutes of Health Stroke Scale (NIHSS) and modified Rankin Scale (mRS) at discharge and at 3 months. Coagulation parameters and hemorrhagic events were monitored to evaluate safety.; Results: Baseline characteristics were comparable between groups. At 3 months, the E-APT group demonstrated significantly greater neurological improvement ( $\Delta$ NIHSS:  $4.31 \pm 3.45$  vs.  $3.25 \pm 3.49$ ;  $p = 0.041$ ) and better functional outcomes (mRS:  $0.98 \pm 1.12$  vs.  $1.35 \pm 1.24$ ;  $p = 0.030$ ) than the S-APT group. Early APT was not associated with increased cerebral hemorrhage (0% vs. 2.6%,  $p = 0.155$ ) or mortality (2.6% vs. 5.2%,  $p = 0.405$ ). Spearman correlation confirmed that shorter intervals from alteplase to APT were associated with improved outcomes ( $\Delta$ NIHSS:  $\rho = -0.28$ ,  $p = 0.001$ ; mRS:  $\rho = 0.24$ ,  $p = 0.003$ ). Subgroup analyses indicated that aspirin was the primary contributor to the observed benefits.; Conclusions: Initiating APT within 24 h after alteplase

improves neurological and functional recovery in AIS without increasing hemorrhagic risk. These findings suggest that earlier APT may be considered in post-thrombolysis management, potentially informing revisions to current guideline recommendations

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#### **4. Stroke recognition and early care pathways following telephone triage in out-of-hours primary care: a register-based study from the Central Denmark Region**

**Authors:** Gude, Martin Faurholdt;Huibers, Linda;Lock, Marie Kryger;Pedersen, Anette Fischer and Blauenfeldt, Rolf Ankerlund

**Publication Date:** 2026

**Journal:** Scandinavian Journal of Primary Health Care 44(1), pp. 1–13

**Abstract:** Background: Out-of-hours primary care (OOH-PC) plays a key role in initial stroke triage, yet the accuracy of telephone assessments by general practitioners (GPs) and their impact on prehospital stroke care remain insufficiently studied.; Aims: To evaluate the sensitivity of stroke and transient ischemic attack (TIA) identification by GPs during OOH-PC telephone triage and examine associations with time from first call to admission, treatment rates, and admission pathways.; Patients and Methods: We conducted a retrospective cohort study including patients admitted to stroke centers in the Central Denmark Region (2020-2022) following OOH-PC contact within 48 h. Triage classification was based on GP documentation and compared with final hospital diagnoses. Outcomes included triage sensitivity, intravenous thrombolysis (IVT) rates, and time to admission.; Results: Among 4414 patients, 2738 had a final diagnosis of stroke or TIA, of whom 1728 were triage positive, corresponding to a sensitivity of 63.1% (95% CI, 61.2-64.9). Among patients with acute ischemic stroke (AIS) and symptom onset  $\leq 3$  h before OOH-PC contact, 387 of 544 were identified (71.1%, 95% CI, 67.2-74.8). Triage-positive AIS patients had higher IVT rates (adjusted difference: 8.9%, 95% CI, 5.4-12.5) and shorter call-to-admission time. In early-presenting AIS, the adjusted IVT difference was 10.9% (95% CI, 1.4-20.5), and triage-negative patients more often presented with impaired consciousness and visual symptoms.; Conclusions: GPs demonstrated moderate sensitivity in telephone triage of stroke in OOH-PC. Symptom presentation differed between triage groups, suggesting recognition may be influenced by symptom type as well as time from onset.

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#### **5. Advancing stroke prevention in atrial fibrillation: a systematic review of machine learning-based risk prediction models**

**Authors:** Islam, Md Mohaimenul and Nkemdirim Okere, Arinze

**Publication Date:** 2026

**Journal:** International Journal of Medical Informatics 217, pp. 106504

**Abstract:** Background: Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia and confers a four to fivefold increase in ischemic stroke risk, accounting for approximately 15 - 20% of all stroke events globally. Despite this burden, the predominant risk stratification tool, the CHA2DS2-VASc score, achieves only modest discrimination, constrained by its static, additive architecture that cannot capture the nonlinear, high-dimensional interactions inherent in real-world electronic health record (EHR) data. This evidence gap creates a dual clinical hazard: under-anticoagulation in high-risk patients and unnecessary bleeding exposure in those whose risk is overestimated. This study aimed to systematically evaluate the predictive performance, methodological rigor, and clinical readiness of machine learning (ML) models derived from EHR data for the prediction of ischemic stroke in patients with AF.; Methods: A systematic search of PubMed, Embase, Scopus, and Web of Science was conducted from inception through September 2025, following PRISMA 2020 guidelines. Studies were eligible if they developed or validated ML models for ischemic stroke prediction using EHR data in adults with AF and reported at least one quantitative performance metric. Methodological quality was assessed using the PROBAST and TRIPOD-AI frameworks.; Results: Eight studies (2017 to 2024) encompassing 809,523 patients across seven countries were included. Supervised ensemble methods

consistently outperformed CHA2DS2-VASc, with AUROCs ranging from 0.66 to 0.91 versus 0.54 to 0.68 for the traditional score. However, performance varied substantially: several models achieved only marginal gains (AUROC 0.63 - 0.69), and the AUROC range reflects pronounced heterogeneity rather than uniform superiority. Critical barriers persist - only one study performed external validation; fewer than half applied explainable AI techniques; class imbalance was rarely addressed; and 88% of studies received a high risk of bias rating in the analysis domain under PROBAST, a finding that substantially limits confidence in the reported performance estimates.; Conclusion: In light of the pervasive methodological limitations identified, including high analytic risk of bias, absence of external validation, and lack of model interpretability, claims of ML superiority over CHA2DS2-VASc must be interpreted with caution. While ML models demonstrate potential discriminative improvements, current evidence is insufficient to support clinical adoption. Translating algorithmic promise into bedside impact requires dynamic longitudinal modeling, rigorous multisite external validation, transparent risk attribution, and prospective evaluation within real-world EHR workflows. (Copyright © 2026 Elsevier B.V. All rights reserved.)

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## 6. Biomarkers of plasticity and recovery after stroke: Insights from the PRACTISE trial

**Authors:** Kolmos, Mia;Sørensen, Nina Vindegaard;Gandrup, Karen Lind;Larsson, Anders Olof;Dunø, Morten and Kruuse, Christina

**Publication Date:** 2026

**Journal:** Clinical Neurology and Neurosurgery 268, pp. 109492

**Abstract:** Background: Biomarkers reflecting neuroplasticity, inflammation, and vascular integrity may explain variability in post-stroke recovery. This exploratory substudy of the PRACTISE trial (NCT05355831) examined longitudinal biomarker changes during stroke rehabilitation and their associations with upper-extremity (UE) motor recovery.; Methods: A total of 24 patients with subacute ischemic stroke (21 completers) received patient-tailored transcranial direct current stimulation (TDCS) or sham during four weeks of UE rehabilitation. UE motor function (FMA-UE) and clinical outcomes - including cognition (MoCA), depression (BDI-II), and quality of life (EQ-5D-5L) - were assessed at baseline, end-of-treatment, and at 12-weeks along with the biomarkers plasma Cathepsin-B, Cathepsin-S, E-selectin, and high-sensitivity C-reactive protein (hsCRP). Baseline MRI was rated for small-vessel-disease (SVD) burden using STRIVE criteria. Longitudinal biomarker changes were evaluated using mixed-effects regression.; Results: Despite substantial interindividual variability, increases in hsCRP were associated with less FMA-UE improvement from baseline to end-of-treatment ( $\beta = -0.75 \pm 0.26$ ,  $p = 0.01$ ). The remaining biomarkers were not significantly associated to FMA-UE improvement. Four participants who later experienced major adverse cardiovascular events showed high levels of hsCRP and Cathepsin-S at baseline. Sensitivity analyses revealed no significant associations with changes in cognition, depression, or quality-of-life, although a trend-level positive association was observed between E-selectin and MoCA-score.; Conclusion: Inflammatory activation-particularly increased hsCRP and Cathepsin-S levels-was associated with reduced motor recovery and characterized individuals who subsequently had major adverse cardiovascular events. These findings support further investigation of inflammatory biomarkers as indicators of both recovery potential and vascular risk during subacute stroke rehabilitation. (Copyright © 2026 The Authors. Published by Elsevier B.V. All rights reserved.)

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## 7. Comparison of the predictive performance of systemic immune-inflammation index and neutrophil-to-lymphocyte ratio for three-month poor functional outcome in ischemic stroke: a systematic review and meta-analysis

**Authors:** Ma, Xuan;Zhou, Yinjuan;Li, Zhenhua;Mao, Guoming;Wei, Haiping and Zhao, Tingting

**Publication Date:** 2026

**Journal:** Annals of Medicine 58(1), pp. 2612820

**Abstract:** Introduction: Ischemic stroke (IS) is a leading cause of global mortality and disability. Early and accurate prognosis is crucial for patient management. The neutrophil-to-lymphocyte ratio (NLR) and systemic immune-inflammation index (SII) are emerging inflammatory biomarkers; however, their relative predictive value for three-month poor functional outcome (modified Rankin Scale mRS] > 2) remains uncertain.; Methods: We systematically searched PubMed, Embase, Web of Science, and the Cochrane Library up to 20 July 2025, adhering to PRISMA guidelines. Observational studies reporting the association of SII or NLR with three-month poor outcome were included. Study quality was evaluated using the Newcastle-Ottawa Scale. Area under the curve (AUC), odds ratios (OR), and standardized mean differences (SMD) were pooled using random-effects models in Stata 16.0.; Results: Twenty-one studies involving 7520 IS patients were analysed. NLR demonstrated marginally superior discriminative ability compared to SII (AUC 0.71, 95% CI: 0.67-0.76 vs. 0.68, 95% CI: 0.64-0.71), though this difference was not statistically significant. Elevated NLR was significantly associated with poor outcome (OR = 1.26, 95% CI: 1.17-1.37,  $p < .001$ ), whereas SII was not (OR = 1.00, 95% CI: 1.00-1.00,  $p = .384$ ). Both markers showed moderate effect sizes (SMD: NLR = 0.69, SII = 0.72;  $p < .001$ ). NLR performed better in non-intervention and Chinese subgroups, while SII exhibited consistent AUC values across treatment and ethnic subgroups.; Conclusion: NLR and SII are accessible prognostic markers in IS. NLR demonstrates superior accuracy and a significant association with poor outcome, while SII shows greater stability across patient subgroups. Both may assist in risk stratification, in resource-limited settings.

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## 8. Living After Stroke: A Qualitative Study About Loss and Grief of Stroke Survivors

**Authors:** Pacheco, Ana Luísa Oliveira da Rocha and Barbosa, Miguel

**Publication Date:** 2026

**Journal:** *Illness, Crisis & Loss* 34(3), pp. 371–388

**Abstract:** Introduction: Stroke survivors face significant challenges due to physical and cognitive limitations, leading to various losses that require a grieving process. Objectives: This study aims to (1) identify the specific losses experienced by stroke survivors; (2) describe their perception and experience of these losses; and (3) their adaptation process during the first three months post-hospital discharge. Method: Six stroke survivors were interviewed 3 months after discharge about their perceived losses, the impact on their lives and identity, emotional responses, and sources of support. Thematic analysis was used to interpret the data. Results: Loss of autonomy emerged as the primary concern, leading to secondary losses such as housing, employment, and social engagement. Negative emotions and challenges in identity reconstruction were prevalent, with a predominant focus on recovery. Conclusions: Stroke survivors struggled with accepting their losses within the initial 3 months, highlighting the critical role of healthcare professionals in supporting their adaptation process.

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## 9. Care navigation for older adults after stroke - A systematic review and meta-analyses to guide social prescribing

**Authors:** Parmar, Tamia; Kelly Dos Santos, Isis; Soh, Sze-Ee; Eng, Janice J. and Ashe, Maureen C.

**Publication Date:** 2026

**Journal:** *Archives of Gerontology and Geriatrics* 149, pp. 106267

**Abstract:** Introduction: Stroke affects many older people worldwide, and patient navigation and social prescribing (e.g., care navigation) may help recovery. We aimed to synthesize evidence on the effect of care navigation for people living with the effects of a stroke (PLWS) on anxiety, depression, quality of life, and well-being. Our secondary focus was to explore these models in rural settings.; Methods: We conducted a systematic review following guidelines, and searched for peer-reviewed randomized controlled trials for older adults (60 years+ or group mean age in this range) who had a stroke and received patient navigation or social prescribing. Two authors independently screened citations at Level 1 (title and abstract) and Level 2 (full text). The date of the last updated search was December 5,

2025. We synthesized data quantitatively using meta-analyses (random effects model and standard mean difference).; Results: We identified 11 studies using patient navigation, but no social prescribing interventions. The total number of PLWS participants at baseline was 7829 with an average mean age of 68 years (43% women). There were no differences between groups for anxiety or quality of life for PLWS, but there was a difference favouring the intervention for depression, although the findings were no longer significant with sensitivity analyses. Thus, results should be interpreted with caution. Only two studies provided data for caregivers, with mixed findings. No studies focused on well-being or rural settings.; Conclusions: Care navigation for PLWS needs more research, including testing social prescribing within stroke rehabilitation in rural and urban locations.; Systematic Review Registration: PROSPERO 2025 CRD420251077958. (Copyright © 2026 The Author(s). Published by Elsevier B.V. All rights reserved.)

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## **10. The role of physiotherapists in acute post-stroke neurorehabilitation: qualitative perspectives from clinicians and stroke unit managers**

**Authors:** Pérez-De La Cruz, Sagrario

**Publication Date:** 2026

**Journal:** International Journal of Qualitative Studies on Health and Well-Being 21(1), pp. 2634880

**Abstract:** Purpose: The aim of this study was to explore and compare the perspectives of both physiotherapists and medical managers regarding the professional role and clinical contributions of physiotherapy within stroke units.; Method: A qualitative study was conducted involving ten physiotherapists and five medical managers from stroke units. Participants shared their professional experiences concerning work performance and the perceived impact of physiotherapy on patient care.; Results: Thematic analysis identified four key areas for physiotherapists: specific training, professional functions, treatment modalities, and the relevance of professionalism and empathy. For medical managers, the analysis focused on their perception of physiotherapy work, their understanding of factors that enhance treatment, and assigned functions. The findings reveal a lack of standardized treatment protocols (non-heterogeneity) and emphasize the need for strong interpersonal professional relationships and high standards of professionalism.; Conclusions: The observed heterogeneity in practices leads to inconsistencies in patient care. Furthermore, there is a notable gap in medical managers' understanding of the specific clinical scope and technical interventions provided by physiotherapists. These findings highlight the need for coordinated rehabilitation programs and a clearer definition of the physiotherapist's role in acute stroke units to ensure equitable and comprehensive care.

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## **11. Respiratory-swallow coordination training using bimodal signal biofeedback for patients with post-stroke dysphagia: a randomized controlled trial**

**Authors:** Wang, Lian;Qiao, Jia;Wei, Zhenhai;Liu, Xiaoqin;Wei, Xiaomei and Dou, Zulin

**Publication Date:** 2026

**Journal:** Annals of Medicine 58(1), pp. 2607218

**Abstract:** Objective: The purpose was to investigate the effects of respiratory-swallow coordination training with bimodal signal biofeedback on swallowing function in patients with post-stroke dysphagia.; Methods: Post-stroke dysphagia Patients were randomly assigned to either the control group or the experimental group. The control group received conventional rehabilitation, while the experimental group underwent additional respiratory-swallow coordination training based on biofeedback. The training protocol consisted of three phases, conducted at an intensity of 30 min/day, 6 days/week, for two consecutive weeks. Outcome measures included the Functional Oral Intake Scale (FOIS) score, the Rosenbek Penetration-Aspiration Scale (PAS) score, respiratory-swallow coordination, and videofluoroscopic swallowing study temporal and kinematic parameter. Assessments were conducted at baseline, post-treatment, and at a one-month follow-up.; Results: Thirty patients were enrolled. Both

groups showed significant improvement in FOIS scores from baseline to both two-week post-treatment and one-month follow-up ( $p < 0.001$ ). Compared to the controls, the experimental group demonstrated significantly greater FOIS score improvement at both post-treatment and follow-up ( $p < 0.001$ ). The proportion of patients with a  $\geq 2$ -point increase in FOIS scores was significantly higher in the experimental group than in the control group at both post-treatment ( $p < 0.01$ ) and one-month follow-up ( $p < 0.01$ ). After two weeks of treatment, the percentage of PAS scores  $\geq 6$  was significantly lower in the experimental group than in the control group ( $p < 0.001$ ). Additionally, the percentage of optimal respiratory-swallow pattern was significantly higher in the experimental group than in the control group ( $p < 0.001$ ).; Conclusion: Bimodal signal biofeedback-based respiratory-swallow coordination training can effectively improve respiratory-swallow coordination and swallowing function in patients with post-stroke dysphagia.

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## 12. Evaluating the Clinical Effectiveness of Nurse-Led Rehabilitation for Stroke Survivors: A Systematic Review and Meta-Analysis

**Authors:** Wu, Min;Zhang, Yuejuan;Pi, Guifang;Chen, Bowei and Yang, Nan

**Publication Date:** 2026

**Journal:** Journal of Advanced Nursing (John Wiley & Sons, Inc.) 82(7), pp. 6970–6981

**Abstract:** Aim: To systematically compare nurse-led versus traditional rehabilitation in improving clinical outcomes for stroke survivors. Design: Systematic review and meta-analysis. Methods: Data were extracted from Cochrane, PubMed, Embase, and Web of Science (searched up to July 2024). Analyses with standardized mean differences (SMDs) and risk ratios (RRs) as the estimates were performed in Review Manager 5.4 and Stata 15.0. Randomized controlled trials investigating nurse-led stroke rehabilitation with outcomes such as mental component summary (MCS) and physical component summary (PCS) of quality of life, self-efficacy, National Institutes of Health Stroke Scale (NIHSS), stroke-specific quality of life (SS-QOL), Barthel Index (BI), Geriatric Depression Scale-15 (GDS-15), and pain were included. Sensitivity analyses and Grading of Recommendations Assessment, Development and Evaluation (GRADE) were performed. Results: A total of 12 articles were included. The quality assessment indicated that most studies did not have a serious risk of bias. Nurse-led rehabilitation showed significant improvements in SS-QOL (SMD: 3.33, 95% CI: 1.26, 5.40; very low-quality evidence), depressive symptoms (GDS-15, SMD:  $-2.21$ ; 95% CI:  $-2.80$ ,  $-1.63$ ; high-quality evidence), pain (SMD:  $-1.61$ ; 95% CI:  $-2.14$ ,  $-1.08$ ; high-quality evidence), and BI (SMD: 0.24, 95% CI: 0.01, 0.48; low-quality evidence). However, there were no significant differences in MCS, PCS, self-efficacy, or NIHSS between the two groups. Sensitivity analysis showed that the results for SS-QOL and BI were unstable and should be interpreted with caution. Conclusion: Nurse-led rehabilitation is effective in improving psychological outcomes, particularly depression (GDS-15) and pain, although this high-quality evidence is based on a single study. Functional independence (BI) and SS-QOL are also improved, but the evidence for these outcomes is of low quality and highly unstable in sensitivity analyses. No significant benefits are found for other outcomes. The evidence quality varies, and future high-quality studies are needed to confirm these findings. Implications for the Profession and/or Patient Care: Incorporating nurse-led rehabilitation into stroke guidelines and implementing standardized depression screening programs and non-pharmacological pain interventions in community rehabilitation could be beneficial for populations with depressive symptoms and chronic pain. Reporting Method: This study adhered to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines for transparent reporting of systematic reviews. Patient or Public Contribution: This study did not include patient or public involvement in its design, conduct, or reporting.

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## 13. Smartphone-based motion capture for gait quantification and symmetry analysis in moderate-stage stroke patients

**Authors:** Zeng, Yangkang;Peng, Yinghu;Xie, Lanfang;Liu, Lu;Fang, Peng;Huang, Huanjie;Chen, Songbin;Qiu, Xiaoying;Wei, Xijun and Li, Hai

**Publication Date:** 2026

**Journal:** Gait & Posture 128, pp. N.PAG

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**14. Clinical outcomes of direct oral anticoagulants versus warfarin for ischemic stroke caused by left ventricular thrombus: A retrospective one-center study**

**Authors:** Zhang, Jasmine;Nguyen, Sophie;Behzadi, Faraz;Harrison, Brigham;Martin, Josephine;Singh, Savdeep;Johnson, Dakota;Alexandrov, Andrei and Dawod, Judy

**Publication Date:** 2026

**Journal:** Clinical Neurology and Neurosurgery 267, pp. 109432

**Abstract:** Objective: LVT is a leading etiology of cardioembolic stroke, and appropriate anticoagulation therapy is essential. However, the choice of anticoagulant in LVT patients remains based on the individual patient and physician. The objective of this study is to evaluate the relative clinical outcomes of warfarin and direct oral anticoagulant (DOAC) agents for patients with ischemic stroke due to left ventricular thrombus (LVT).; Methods: This retrospective observational study included 48 adult patients treated for ischemic stroke secondary to LVT at our institution between 9/2017 and 12/2024. Patients were included if they were anticoagulated with warfarin or a DOAC and had follow-up cardiac imaging to assess thrombus resolution within 6 months of LVT diagnosis. We evaluated rates of LVT resolution and complications by anticoagulant usage.; Results: By 6 months, 79% of patients achieved thrombus resolution. Five patients were switched from warfarin to a DOAC. There was no statistically significant difference in thrombus resolution rates between warfarin, Apixaban, and Rivaroxaban use at initial diagnosis ( $p = 0.6$ ). However, thrombus resolution was associated with DOAC use at 6 month follow-up ( $p = 0.07$ ). Warfarin use trended towards a higher rate of complications, although the overall number of complications was too small to reach statistical significance.; Conclusions: These findings suggest that DOACs are non-inferior to warfarin for resolution of LVT by 6 months. Warfarin may be associated with greater complication risk. These factors should be taken into consideration when selecting an anticoagulant agent for patients diagnosed with LVT. (Copyright © 2026 Elsevier B.V. All rights reserved.)