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Stroke

Current Awareness Bulletin

February 2025

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  30 minutes. Learn about the communication barriers patients may encounter, and ways to ensure they get the most from their care.
  Next sessions: 4th March @ 12 noon, 2nd April @ 1pm & 15th May @ 2pm

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1. **Contribution of cognitive status on admission to mobility and balance at discharge from acute rehabilitation for stroke**

Authors: Campo, Marc;Toglia, Joan;Jaywant, Abhishek and O'Dell, Michael W.

Publication Date: 2025

Journal: International Journal of Rehabilitation Research

Abstract: Acute inpatient rehabilitation is crucial for improving mobility and balance for individuals with stroke. A potentially important factor in the recovery of mobility and balance is cognition. The purpose of this study was to determine the effect of cognition on mobility and balance in acute stroke rehabilitation. This was a longitudinal cohort study based on an inpatient rehabilitation unit at a large academic medical center. Participants were individuals with stroke admitted to acute rehabilitation after an acute care hospital stay (N = 281). Demographic data and predictor variables were collected on admission to the unit. Outcomes were collected at discharge from the unit. Multiple regression analyses were used to determine the associations between cognition (Montreal Cognitive Assessment) on mobility (Functional Independence Measure mobility subscale) and balance (Berg Balance Scale). Subtests from the Montreal Cognitive Assessment were also examined to determine if specific dimensions of cognition could predict balance after controlling for covariates. Dominance analysis was used to determine the relative importance of baseline predictors. In separate models, cognition was a significant predictor of mobility (B = 0.19) and balance (B = 0.28) at discharge after adjusting for admission mobility and balance, as well as age, sex, and length of stay. The most important predictors in both models were baseline mobility and balance, but cognition contributed to the models independently of baseline scores. Cognition was generally more important than age and sex while about equally important as length of stay. In separate models, the visuospatial/executive (B = 0.42) and the delayed recall (B = 0.37) subtests were also significant predictors of mobility. The models' most important predictors were baseline mobility and balance scores. Cognition is a clinically relevant predictor of mobility and balance in acute stroke rehabilitation. Specific dimensions of cognition, such as executive function,

visuospatial function, and delayed recall, may be especially important. Cognitive challenges and meta-cognitive strategies should be included in mobility and balance tasks when possible. Studies that evaluate the efficacy of dual-task training and meta-cognitive approaches are needed.

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2. **Inflammatory markers in acute ischemic stroke**

Authors: Cao, Zi-Jie;Wang, Qian-Xuan;Sun, Yi;Li, Jie and Li, Feng-Ling

Publication Date: 2025

Journal: Clinica Chimica Acta; International Journal of Clinical Chemistry

Abstract: Acute ischemic stroke (AIS) is associated with a high incidence and significant rates of disability, making it a critical focus of clinical research. The current review investigates the role of serum inflammatory markers in the pathogenesis and prognosis of AIS. By quantitatively analyzing specific inflammatory markers, this study aims to enhance the understanding of the pathophysiological mechanisms underlying AIS, support early diagnosis, improve disease assessment, and establish a scientific foundation for targeted treatment strategies to optimize clinical outcomes. From a pathophysiological perspective, multiple inflammatory markers are involved in the inflammatory response that occurs within brain tissue following cerebral ischemia. The serum levels of various inflammatory markers were measured in individuals with AIS, revealing strong correlations between these markers and disease severity. The findings indicate that these markers can serve as reliable indicators of disease progression. Further analysis demonstrated their prognostic value in predicting functional recovery and the risk of recurrence. Notably, during a 3-month follow-up, each 0.32 ng/mL increase in matrix metalloproteinases-9 levels was associated with a 16 % increase in the risk of disability and mortality after AIS. The findings of this review contribute to a more comprehensive understanding of the pathological and physiological mechanisms of AIS and offer a foundation for advancing early diagnostic methods, disease assessment tools, and personalized treatment strategies. Monitoring inflammatory marker levels may enable clinicians to more accurately evaluate disease severity and develop tailored therapeutic interventions, potentially reducing disability and recurrence rates while improving quality of life for individuals with AIS. The findings highlight the potential of precision medicine approaches based on inflammatory markers to shape future AIS treatment paradigms.; 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. (Copyright © 2025. Published by Elsevier B.V.)

3. **Covert Perioperative Strokes in Older Patients Having Noncardiac Surgery (PRECISION): A Prospective Cohort Analysis**

Authors: Cui, Qianyu;Zhao, Weixing;Chen, Hongyan;Ren, Yue;Yin, Xueke;Zheng, Maoyao;Li, Muhan;Wang, Jie;Wang, Juan;Zeng, Min;Li, Shu;Zhang, Kai;Wu, Xiaodong;Zhou, Liye;Jiao, Youyou;Sessler, Daniel I.;Mi, Weidong and Peng, Yuming

Publication Date: 2025

Journal: Anesthesiology

Abstract: Background: Perioperative strokes may promote postoperative neurocognitive dysfunction. This study thus evaluated the incidence of postoperative strokes and the association between strokes and postoperative neurocognitive outcomes in older patients recovering from noncardiac surgery.; Methods: The Postoperative Covert Stroke and Cognitive Dysfunction among Elderly Patients Undergoing Noncardiac Surgery study (PRECISION) was a two-center prospective cohort study evaluating patients aged 60 yr or older who had elective, noncardiac inpatient surgery at two Chinese academic centers. Postoperative strokes were evaluated by scheduled magnetic resonance brain imaging within 7 days. The primary outcome was the cumulative incidence of postoperative stroke. Secondary outcomes included postoperative delirium within the first 5 days after surgery, neurocognitive decline at 12 months, and the association between stroke and neurocognitive dysfunction.; Results: Among 934 patients (mean age, 67 yr; 45% male) included in the analyses, two thirds had neurosurgical craniotomies. There were 111 (11.9%; 95% CI, 9.8 to 14.0%) covert strokes within 7 days after surgery and no overt strokes. Postoperative delirium was observed in 117 patients (12.5%; 95% CI, 10.4 to 14.7%) within 5 days, and neurocognitive decline was observed in 147 patients (18.8%; 95% CI, 16.0 to 21.5%) at 1 yr after surgery. Postoperative covert strokes were significantly associated with delirium (adjusted odds ratio, 2.18; 95% CI, 1.31 to 3.62; P = 0.003) and 1-yr neurocognitive decline (adjusted odds ratio, 2.33; 95% CI, 1.31 to 4.13; P = 0.004) in overall participants.; Conclusions: Among patients aged 60 yr and older who had major noncardiac surgery, mainly intracranial, one in nine patients experienced a perioperative covert stroke. Covert strokes more than doubled the risk of postoperative delirium and long-term neurocognitive decline. Covert perioperative strokes are common and clinically meaningful.

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4. **Effects of a Supportive Training on Caregiving Burden of Stroke Patients' Caregivers alter Discharge from an Intensive Care Unit (ICU)**

Authors: Dahmardeh, Mahla;Dahmardeh, Hanie;Sadeghi, Narjes Khatoon and Moghaddam, Alireza Ansari

Publication Date: 2025

Journal: Archives of Anesthesiology & Critical Care

5. **Early vs later non–vitamin K antagonist oral anticoagulants in patients with acute ischemic stroke and atrial fibrillation: A meta-analysis and systematic review of randomized trials**

Authors: Fu, Linghua;Hu, Jinzhu;Yang, Pingping and Chen, Qi

Publication Date: 2025

Journal: Heart Rhythm

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6. **Effect of visual biofeedback on fine motor function and activity daily of life in stroke patients: A pilot study**

Authors: Goodarzi, Zahra;Jamebozorgi, Ali Asghar;Irani, Ashkan;Baghban, Alireza Akbarzadeh and Daryabor, Aliyeh

Publication Date: 2025

Journal: Journal of Bodywork & Movement Therapies

Abstract: Many stroke patients suffer from dysfunction in their upper limbs, which can lead to difficulties in performing activities of daily living (ADL) as well as social and work interactions. This is particularly true for patients whose dominant side has been affected. The aim of the current study was to explore how effective visual biofeedback could improve fine motor function in the hand and ADL for people suffering from a stroke. Ten individuals who had experienced a stroke with aged from 60 to 74 years old (mean: 64.3 years) were randomly divided into two groups. Patients in study group (n: 5) received 15 sessions of visual biofeedback therapy along with routine occupational therapy. Control group (n: 5) received only routine occupational therapy. Fine motor function was measured by Fugl Meyer Scale (FMS), box and block test (BBT), and Purdue pegboard test (PPBT). Also, ADL was measured by functional independence measure (FIM). These clinical outcomes were evaluated before, after, and 1.5 months following the interventions. The results showed that the study group experienced a significant increase in fine motor function after receiving visual biofeedback, compared to the control group. The ADL also improved in both the study and control groups after the intervention, but there was no significant difference between the two groups during the intervention and follow-up stages for ADL. It seems that combining biofeedback with routine occupational therapy could be a promising method to enhance fine motor function in individuals with stroke.

7. **Measures to ensure safety during telerehabilitation of people with stroke: A scoping review**

Authors: Gutierrez-Arias, Ruvistay;González-Mondaca, Camila;Marinkovic-Riffo, Vinka;Ortiz-Puebla, Marietta;Paillán-Reyes, Fernanda and Seron, Pamela

Publication Date: 2025

Journal: Journal of Telemedicine & Telecare

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8. **Clinical state and future directions of stem cell therapy in stroke rehabilitation**

Authors: Habib, Pardes and Steinberg, Gary K.

Publication Date: 2025

Journal: Experimental Neurology

Abstract: Despite substantial advances in the acute management of stroke, it remains a leading cause of adult disability and mortality worldwide. Currently, the reperfusion modalities thrombolysis and thrombectomy benefit only a fraction of patients in the hyperacute phase of ischemic stroke. Thus, with the exception of vagal nerve stimulation combined with intensive physical therapy, there are no approved neuroprotective/neurorestorative therapies for stroke survivors. Stem cell therapy is a promising treatment for stroke patients and has been the focus of an increasing number of clinical trials over the past two decades. We provide a comprehensive overview of stem cell therapies available to stroke patients, focusing on the different types and doses of stem cells, timing and route of administration, patient selection, clinical outcomes, translational challenges, and future directions for the field. Information on ongoing and completed studies was retrieved from ClinicalTrials.gov, PubMed, Google Scholar, ICTRP, and Scopus. Autologous bone marrow-derived mononuclear cells (BMMNCs) are the most used, followed by autologous bone marrow stromal cells. IV therapy is typically applied in acute to subacute phases, while IT or IC routes are utilized in chronic phases. Although early-phase trials (Phase I/II) indicate strong safety and tolerability, definitive clinical effectiveness has yet to be unequivocally proven. Cochrane meta-analyses show NIH Stroke Scale improvements, though studies often have high bias and small sample sizes. Larger randomized, double-blind, placebo-controlled trials are ongoing to refine stem cell transplantation protocols, addressing cell type and source, dosage, timing, patient selection, the potential for combination therapies, and clinical efficacy.; Competing Interests: Declaration of competing interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Gary K. Steinberg reports financial support was provided by National Institutes of Health. Gary K. Steinberg reports financial support was provided by California Institute for Regenerative Medicine. Gary K. Steinberg reports financial support was provided by Bernard and Ronni Lacroute. Gary K. Steinberg reports financial support was provided by William Randolph Hearst Foundation. Gary K. Steinberg reports financial support was provided by Marc Paskin. Gary K. Steinberg reports a relationship with Peter Lazic US Inc. that includes: consulting or advisory. Gary K. Steinberg reports a relationship with SanBio Inc. that includes: consulting or advisory. Gary K. Steinberg reports a relationship with Surgical Theater LLC that includes: consulting or

advisory. Gary K. Steinberg reports a relationship with Carl Zeiss AG that includes: consulting or advisory. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. (Copyright © 2024. Published by Elsevier Inc.)

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9. **Predicting the likelihood of readmission in patients with ischemic stroke: An explainable machine learning approach using common data model data**

Authors: Hwang, Yu Seong;Kim, Seongheon;Yim, Inhyeok;Park, Yukyoung;Kang, Seonguk and Jo, Heui Sug

Publication Date: 2025

Journal: International Journal of Medical Informatics

Abstract: Background: Ischemic stroke affects 15 million people worldwide, causing five million deaths annually. Despite declining mortality rates, stroke incidence and readmission risks remain high, highlighting the need for preventing readmission to improve the quality of life of survivors. This study developed a machine-learning model to predict 90-day stroke readmission using electronic medical records converted to the common data model (CDM) from the Regional Accountable Care Hospital in Gangwon state in South Korea.; Methods: We retrospectively analyzed data from 1,136 patients with ischemic stroke admitted between August 2003 and August 2021 after excluding cases with missing blood test values. Demographics, blood test results, treatments, and comorbidities were used as key features. Six machine learning models and three deep learning models were used to predict 90-day readmission using the synthetic minority over-sampling technique to address class imbalance. Models were evaluated using threefold cross-validation, and SHapley Additive exPlanations (SHAP) values were calculated to interpret feature importance.; Results: Among 1,136 patients, 196 (17.2 %) were readmitted within 90 days. Male patients were significantly more likely to experience readmission (p = 0.02). LightGBM achieved an area under the curve of 0.94, demonstrating that analyzing stroke and stroke-related conditions provides greater predictive accuracy than predicting stroke alone or all-cause readmissions. SHAP analysis highlighted renal and metabolic variables, including creatinine, blood urea nitrogen, calcium, sodium, and potassium, as key predictors of readmission.; Conclusion: Machine-learning models using electronic health record-based CDM data demonstrated strong predictive performance for 90-day stroke readmission. These results support personalized post-discharge management and lay the groundwork for future multicenter studies.; 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. (Copyright © 2024. Published by Elsevier B.V.)

10. **From lab coats to clinical trials: Evolution and application of electromagnetic fields for ischemic stroke rehabilitation and monitoring**

Authors: Isaković, Jasmina;Chin, Benjamin Daniel;Oberwinter, Moritz and Rance, Hannah Katarina

Publication Date: 2025

Journal: Brain Research

Abstract: Stroke is a neurovascular disorder which stands as one of the leading causes of death and disability worldwide, resulting in motor and cognitive impairment. Although the treatment approach depends on the time elapsed, the type of stroke and the availability of care centers, common interventions include thrombectomy or the administration of a tissue plasminogen activator (tPA). While these methods restore blood flow, they fall short in helping patients regain lost function. With that, recent years have seen a rise in novel methods, one of which is the use of electromagnetic fields (EMFs). Due to their ability to impact the charges in their vicinity, thereby altering the immune response and cell signaling, EMFs became suitable candidates for stroke rehabilitation. Based on their characteristics, therapeutic EMFs can be categorized into transcranial magnetic stimulation (TMS), transcranial direct current stimulation (tDCS), pulsed (PEMFs) and low frequency (LF-EMFs) electromagnetic fields, among others. In addition to treatment, EMFs are being explored for stroke monitoring, utilizing external EMFs for imaging or recording innate EMFs linked to neural activity. Drawing from research on the effects of EMFs, this review aims to provide a comprehensive overview of the physical principles and molecular mechanisms underlying the action of EMFs, along with a discussion of their application in preclinical studies and clinical trials. Finally, this paper not only addresses the importance of treatment availability and potential side-effects, but also delves into the technical and ethical challenges associated with the use of EMFs, while exploring their prospects and future opportunities.; 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.

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11. **Elder Mistreatment Within Stroke Family Caregiving**

Authors: Katigbak, Carina;Browning, Wesley R.;Savitz, Sean and Pickering, Carolyn E. Z.

Publication Date: 2025

Journal: Journal of Applied Gerontology

Abstract: This secondary data analysis sought to identify characteristics associated with mistreatment among chronic stroke survivors who transition to dementia. We examined baseline data from a multi-time series survey study (n = 453; where caregivers of those with stroke n = 107, and those without stroke, n = 346) on caregiving experiences influencing dementia family caregivers' abusive or neglectful behaviors. Inferential statistical analysis indicated that baseline mistreatment rates were similar across stroke and non-stroke subgroups, though this finding was not significant. Caregiver depression was significantly associated with mistreatment. Multi-morbidity, prescription medication use, and limited mobility

were more common among stroke survivors. Stroke-related complications may impose a greater burden of care upon family caregivers whose care recipients also have dementia. Determining timepoints of heightened mistreatment risk for stroke survivors may significantly impact long-term trajectories of stroke management to screen and identify those who may benefit from added support and intervention.

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12. **Efficacy of brain-computer interface training with motor imagery-contingent feedback in improving upper limb function and neuroplasticity among persons with chronic stroke: a double-blinded, parallel-group, randomized controlled trial**

Authors: Kim, Myeong Sun;Park, Hyunju;Kwon, Ilho;An, Kwang-Ok;Kim, Hayeon;Park, Gyulee;Hyung, Wooseok;Im, Chang-Hwan and Shin, Joon-Ho

Publication Date: 2025

Journal: Journal of NeuroEngineering & Rehabilitation (JNER)

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13. **Investigation the effect of rigid taping on knee and hip joint kinematics in chronic stroke patients with knee hyperextension gait**

Authors: Korkusuz, Süleyman;Fil-Balkan, Ayla;Korkusuz, Büş;Özgören, Nihat;Arıtan, Serdar;Ceren, Ali Naim and Topçuoğlu, Mehmet Akif

Publication Date: 2025

Journal: Gait & Posture

Abstract: Background: Although stroke patients gain an advantage in gait due to the knee hyperextension that occurs during the stance phase, this situation disrupts the biomechanical structure of the knee and increases the risk of injury to the capsular and ligamentous structures. The aim of this study was to examine the effects of rigid taping on hyperextension control and pelvic kinematics in stroke patients with knee hyperextension during the stance phase of gait.; Research Question: Does rigid taping have an effect on hyperextension control and pelvic kinematics in stroke patients with knee hyperextension?; Methods: Thirty stroke patients aged between 40 and 70 were included in this pre-postintervention study. Kinematic assessment of gait was performed using a motion analysis system (Vicon Ltd, Bilston). Then, the rigid taping was applied to the patients using the hyperextension taping technique, and the kinematic analysis of the gait was repeated with the motion analysis system.; Results: It was found that the rigid taping for the knee hyperextension significantly reduced the knee hyperextension ($p < 0.05$). Additionally, it was observed that the rigid taping significantly reduced the pelvic retraction ($p < 0.05$). However, no change was observed in the pelvic drop with the rigid taping application.; Significance: Our results showed that the rigid taping effectively controlled the knee hyperextension. It was thought that the rigid taping application contributed to reducing knee hyperextension and pelvic retraction because it mechanically gave the knee a flexion moment and provided proprioceptive input.; 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.

14. **Experiences With Mobile Health-Enabled Ambulatory Monitoring Among Stroke Survivors: A Qualitative Study**

Authors: Lau, Stephen C. L.;Bright, Lindsay;Connor, Lisa Tabor and Baum, Carolyn M.

Publication Date: 2025

Journal: OTJR : Occupation, Participation and Health

Abstract: Inquiring into the experiences of stroke survivors toward ambulatory monitoring is crucial for optimizing user adoption, design, implementation, and sustainability of ambulatory monitoring in the stroke population. This study was aimed to identify facilitators and barriers for ambulatory monitoring among stroke survivors, as well as their suggestions for development and implementation of ambulatory monitoring. We conducted individual semi-structured interviews with 40 stroke survivors who received ambulatory monitoring. The interviews were analyzed using thematic content analysis. Six themes about facilitators associated with ambulatory monitoring emerged: (1) user support, (2) technological features, (3) convenience, (4) personal strategies, (5)social influence, and (6)time commitment. Three themes about barriers to using ambulatory monitoring emerged: (1) personal factors, (2) functionality, (3) study design. Three themes about suggestions emerged: (1) personalization, (2) functionality, and (3) interactive feedback. As mobile health technology is becoming more popular, the findings of this study provide timely implications and practical considerations for ambulatory monitoring in the stroke population.; Competing Interests: Declaration of Conflicting InterestsThe author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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15. **Impact of inspiratory muscle training on aspiration symptoms in patients with dysphagia following ischemic stroke**

Authors: Liu, Shan;Fan, Zhenfeng;Fu, Minke;Cheng, Keling;Zhang, Xin;Ni, Jun and Wang, ZhiYong

Publication Date: 2025

Journal: Brain Research 1850

Abstract: Objective: To investigate the impact of inspiratory muscle training on lung function and swallowing function in patients with dysphagia-induced aspiration following ischemic stroke and to evaluate the effectiveness of inspiratory muscle training on aspiration symptoms.; Methods: Fifty-eight inpatients with dysphagia-induced aspiration following ischemic stroke were selected and randomly divided into a control group (n = 29, conventional swallowing therapy) and a treatment group (n = 29, conventional swallowing therapy plus inspiratory muscle training). Both groups received conventional swallowing function training, including oral sensory training, oral motor training, airway safety protection training, and neuromuscular electrical stimulation therapy for 10-20 min per session, twice daily for 2 weeks. The treatment group additionally received inspiratory muscle resistance training using the POWERbreathe device for 20 min per session, twice daily for 2 weeks. Swallowing function

was assessed using the Penetration-Aspiration Scale (PAS), Functional Dysphagia Scale (FDS), and Functional Oral Intake Scale (FOIS) based on the videofluoroscopic swallowing study (VFSS) before and after treatment. Lung function, including maximal peak expiratory flow rate (PEF) and forced vital capacity (FVC), was evaluated using the Miraclink X-SCRIBE cardiac stress testing system.; Results: Before treatment, there were no significant differences in FOIS, FDS, and PAS scores between the two groups (P > 0.05), while post-treatment, both groups showed significant improvements in these indicators (P 0.05), whereas post-treatment, the treatment group showed significant improvements in these indicators (P 0.05). The treatment group also showed more significant improvements than the control group (P < 0.05). Finally, a correlation analysis revealed a significant linear relationship between FVC and PEF in the post-treatment PAS in the treatment group (P < 0.05).; Conclusion: Inspiratory muscle training can improve lung function in patients with dysphagia following ischemic stroke, as it develops swallowing function more effectively than conventional swallowing function training alone. Moreover, inspiratory muscle training is effective in treating aspiration caused by dysphagia, with enhancements in aspiration related to improved lung function.; 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.

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16. **Potential profiles of caregivers' benefit finding in ischaemic stroke: The role of personality traits and coping styles**

Authors: Lou, Cheng;Xiaoxia, Duan;Wang, Hui;OuYang, Hong;Liu, Yanxin and Chen, Ting

Publication Date: 2025

Journal: Acta Psychologica

Abstract: Objective: To investigate the different categories of benefit finding among caregivers of patients with ischemic stroke and the mechanisms of personality and coping styles using an individual-centered approach.; Methods: A cross-sectional survey was conducted among 235 caregivers of patients with ischemic stroke in the neurology departments of three tertiary hospitals in Bengbu using the revised Inventory of Illness Benefit, the Short Form of the Chinese Big Five Personality Inventory, and the Simplified Coping Style Questionnaire.; Results: The benefit finding of caregivers of patients with ischemic stroke could be categorized into three latent classes: "Low sense of benefit-low personal growth group " (n = 58, 24.68 %), "Moderate sense of benefit-healthy behaviors group " (n = 117, 49.78 %), and "High Sense of Benefit-Family Cohesion Group " (n = 60, 25.53 %). Neuroticism positively predicted the low benefit group, while conscientiousness, agreeableness, openness, and extraversion positively predicted the moderate and high benefit groups, all acting as mediators across different benefit categories.; Conclusion: Caregivers of patients with ischemic stroke exhibit significant classification characteristics in benefit finding. Healthcare providers can develop targeted intervention measures based on the specific characteristics of the caregivers.; Competing Interests: Declaration of competing interest All authors declare that they do not receive any financial benefits of any kind, including but not limited to consulting fees, patents, stock holdings, travel grants, etc., from any commercial entity, corporation, or other for-profit organization. Personal Relationships: All authors do not have any personal relationships with each other, such as relatives, partners, etc., that could lead to a conflict of interest. In addition,

all authors do not have any personal relationships with reviewers, editors, research funders, or other relevant persons. Academic interests: All authors declare that they have not received any academic benefits, such as research evaluation, position promotion, professional status, etc., as a result of the publication of specific results. Political interests: All authors declare that they have not been influenced by any political position or policy to ensure the independence and objectivity of the research. Other interests: All authors declare that they do not have any other potential conflicts of interest that may influence the results or conclusions of the study.

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17. **Factors influencing participation and engagement in post-stroke cardiac rehabilitation and exercise: an exploratory qualitative study**

Authors: Martin, Emma;Cameron, Trudi and Radford, Kate

Publication Date: 2025

Journal: International Journal of Rehabilitation Research.Internationale Zeitschrift Fur Rehabilitationsforschung.Revue Internationale De Recherches De Readaptation

Abstract: The secondary prevention benefits of cardiac rehabilitation and similar exercise classes for stroke survivors are well established, however post-stroke exercise participation remains low. This research aimed to explore the factors affecting participation and engagement in UK-based post-stroke cardiac rehabilitation and exercise, from the perspective of the service user and service provider. An exploratory study, using semi-structured interviews, was conducted (n = 8, service user = 4), adopting a phenomenological approach. All interviews applied a topic guide informed by the Health Belief Model and the International Classification of Functioning, Disability and Health, and were analysed using inductive thematic analysis. Post-stroke cardiac rehabilitation and exercise participation was influenced by numerous factors, encompassed into three themes: Accessibility (describing the environmental pre-class limiting factors), Programme Structure (valuing in-class supervision, socialisation and adaptations) and Patient Characteristics (encompassing the influence of the service user's personality and experiences). Effective secondary prevention of stroke through cardiac rehabilitation and other exercise-based rehabilitation requires policy development and commissioning to ensure appropriate delivery. Further research should determine the feasibility of novel exercise class formats, in addition to larger trials investigating their clinical benefit and cost effectiveness. (Copyright © 2025 The Author(s). Published by Wolters Kluwer Health, Inc.)

18. **Therapeutic Options for Disabling Acute Ischemic Stroke**

Authors: Moreno-Gomez, Veronica and Wold, Jana J.

Publication Date: 2025

Journal: The Medical Clinics of North America

Abstract: Ischemic stroke affects up to 3% of the US population and is the leading cause of disability nationwide. This article outlines the evidence to support the use of intravenous thrombolytic, including tenecteplase, in the setting of acute ischemic stroke, along with thrombectomy for up to 24 hours, even in those patients with a large ischemic core and in those with an acute basilar artery occlusion. A clinical case of a patient with large ischemic core who received thrombectomy is included, along with images.; Competing Interests: Disclosure The authors have nothing to disclose.

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19. **Design and validation of PACTUS: A gamified electronic device for stroke rehabilitation**

Authors: Sánchez-Gil, Juan,J.;Sáez-Manzano, Aurora;López-Luque, Rafael;Ochoa-Sepúlveda, Juan-José and Cañete-Carmona, Eduardo

Publication Date: 2025

Journal: Computer Methods and Programs in Biomedicine

Abstract: Background and Objective: Stroke remains a significant global concern, particularly as populations age and the incidence of stroke rises. Approximately one third of stroke survivors experience loss of autonomy, often leading to a decreased participation in rehabilitation due to economic, emotional, and social barriers. In response to these challenges, this study introduces PACTUS, an innovative gamified device designed for the rehabilitation of cognitive and motor functions in the upper limbs of patients with post-stroke. PACTUS aims to improve patient motivation and enable precise monitoring of rehabilitation progress by both therapists and patients.; Methods: Developed in collaboration with the Institute of Neurosciences at the Red Cross Hospital in Cordoba, the device underwent a pilot pre-test phase with two neurological patients. An observational study was also conducted involving 30 volunteers, including healthy individuals and patients with various neurological disorders, to evaluate the safety, feasibility, acceptability, and potential utility of PACTUS in a broader clinical context.; Results: Preliminary findings suggest that PACTUS is a promising tool for stroke rehabilitation, offering a safe and cost-effective method to ensure accurate upper limb movement.; Conclusions: Feedback from both patients and therapists highlighted areas of improvement and underscored the device's capacity to adapt to different rehabilitation stages, affirming its broad application potential across diverse neurological conditions.; 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.

20. **Quantifying Brain Health in Acute Ischemic Stroke Through Effective Reserve**

Authors: Schirmer, Markus D.;Alhadid, Kenda;Regenhardt, Robert W. and Rost, Natalia S.

Publication Date: 2025

Journal: Neurology

Abstract: Objective: To quantify brain health using a measure of reserve that incorporates pre-existing pathology.; Methods: We analyzed 2 retrospective ischemic stroke cohorts (GASROS and SALVO) with neuroimaging and 90-day modified Rankin Scores (mRS) available. White matter hyperintensity (WMHv), brain, and intracranial volumes were automatically extracted and brain parenchymal fraction (BPF) calculated. The latent variable effective reserve (eR) was modeled using age, WMHv, and BPF or brain volume in GASROS. Models were compared using Bayes Information Criterion (BIC). The best model's eR estimates were categorized into quartiles and evaluated in SALVO.; Results: GASROS included 476 (median age: 65.8; 65.3% male) and SALVO included 43 (median age: 69.2; 62.8% male) patients. Inverse associations between eR and mRS was seen in both models, with brain volume outperforming BPF (path coefficients: -0.67, -0.48, respectively; $p < 0.001$; $|\Delta BIC| = 362$). Quartile-based eR stratification in both studies showed a similar inverse trend, with worse outcomes in the low reserve group (mRS ≤2 - highest vs lowest quartile: 85/90% vs 59/45% for GASROS/SALVO).; Discussion: Expanding the concept of eR, highlights its clinical translational potential. The strong link between higher eR and better outcomes underscores its value as a protective brain health metric.

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21. **Trajectory of depressive symptoms in a longitudinal stroke cohort**

Authors: Sewell, Katherine;Tse, Tamara;Churilov, Leonid;Linden, Thomas;Crewther, Sheila;Ma, Henry;Davis, Stephen M.;Donnan, Geoffrey A. and Carey, Leeanne M.

Publication Date: 2025

Journal: Journal of Stroke & Cerebrovascular Diseases

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22. **Comparative efficacy and safety of tissue plasminogen activators (tPA) in acute ischemic stroke: A systematic review and network meta-analysis of randomized controlled trials**

Authors: Shahid, Sufyan;Saeed, Humza;Iqbal, Minahil;Batool, Ayesha;Masood, Muhammad Bilal;Ahmad, Muhammad Husnain;Rehman, Aqeeb Ur;Aemaz Ur Rehman, Muhammad and Sultan, Fahd

Publication Date: 2025

Journal: Journal of Stroke & Cerebrovascular Diseases

23. **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)

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24. **Vitamin D Deficiency in the Acute Phase of Stroke May Predict Post-stroke Depression: A Systematic Review and Meta-Analysis**

Authors: Tan, Yongjun;Jing, Xiaojun;Wang, Jiani;Zhou, Li;Wang, Yilin;Zhang, Hua and Yang, Qin

Publication Date: 2025

Journal: Journal of Geriatric Psychiatry & Neurology

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25. **A stroke imaging protocol in patients with a history of contrast-induced anaphylaxis**

Authors: Virador, Gabriel M.;Singh, Rahul B.;Gupta, Vivek;Rao, Dinesh;Huang, Josephine F.;Simon, Leslie V. and Sandhu, Sukhwinder J. S.

Publication Date: 2025

Journal: Current Problems in Diagnostic Radiology

Abstract: The need for emergent, contrast-enhanced neuroimaging in stroke patients with a history of severe reaction to iodinated contrast represents a unique dilemma in emergency departments. There is currently a lack of evidence-based management protocols for these cases. We describe a protocol established at our institution, based off American College of Radiology (ACR) guidelines and institutional experience, to guide decision-making in these scenarios.; Competing Interests: Declaration of competing interest None.

26. **The basic theory and application of the mirror neuron system in dysphagia after stroke**

Authors: Wang, Le;Li, Yi;Liu, Ruyao;Li, Heping;Wang, Liugen and Zeng, Xi

Publication Date: 2025

Journal: Behavioural Brain Research

Abstract: The discovery of the brain's mirror neuron system enables researchers to gain a deeper understanding of social cognitive activities from the level of neural mechanisms. Mirror neurons are situated in bilateral brain regions, overlapping with the swallowing neural network, and there are complex network pathways connecting the two. Repeatedly inducing the activation of mirror neurons in stroke patients can enhance the brain's ability to relearn its original swallowing function, and then restore the swallowing neural network. With the deepening of related studies, rehabilitation therapies based on the mirror neuron system have been discussed and explored by numerous scholars and applied to the rehabilitation of dysphagia after stroke. In this paper, we review the basic theory of mirror neuron system, its mechanism, its relevance to the swallowing neural network, and the clinical application and research progress of related rehabilitation therapies in stroke dysphagia, with a view to triggering relevant researchers to comprehend and innovate the rehabilitation of dysphagia after stroke.; 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.

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27. **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, 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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28. **E-health literacy in stroke patients: Latent profile analysis and influencing factors**

Authors: Xue, Menghan;Wang, Qian;Wang, Jiajia;Ge, Song;Zhang, Zhenxiang and Mei, Yongxia

Publication Date: 2025

Journal: Journal of Advanced Nursing

Abstract: Aims: This study sought to explore latent categories of electronic health (e-health) literacy among stroke patients and analyse its influencing factors.; Design: A cross-sectional, descriptive exploratory design with the STROBE reporting checklist was applied.; Methods: Between July and October 2020, 558 stroke participants from three tertiary care hospitals in Henan Province, China, were recruited using a convenience sampling method. A general information questionnaire and the Electronic Health Literacy Scale were used to collect their socio-demographic information and e-health literacy. Latent profile analysis was used to analyse latent categories of e-health literacy in stroke patients. Multiple logistic regression was used to analyse factors influencing latent categories of e-health literacy in stroke patients.; Results: Three latent categories of e-health literacy existed, including the low e-health literacy group, the low application-high decision-making group and the high literacy-low decision-making group. Multiple logistic regression showed that education level, presence of comorbidities, willingness to interact with people with mental illness, health information sources, frequency of Internet access, frequency of health information inquiry and willingness to receive remote care were predictors of the participants' latent categories of e-health literacy.; Conclusion: Three latent categories of e-health literacy in stroke patients exist, and each latent category's characteristics should be considered while developing health education programmes. It is imperative that healthcare providers understand the requirement of creating tailored and efficient health education programmes for various categories of stroke patients to enhance their e-health literacy.; Impact: It is imperative to improve Chinese stroke patients' overall e-health literacy. We categorized stroke patients' e-health literacy using advanced LPA. These findings hold implications for healthcare approaches, contributing to the enhancement of stroke patients' e-health literacy, enabling them to apply the acquired e-health information to manage and solve their own health issues.; Patient or Public Contribution: No patient or public contribution. (© 2024 John Wiley & Sons Ltd.)

29. **Developing a predictive value for predicting stroke recovery based on transcranial doppler ultrasound parameters**

Authors: Yang, Liu;Cai, Xinyi;Yan, Yanhong and Hui, Pinjing

Publication Date: 2025

Journal: Journal of Neuroscience Methods

Abstract: Background: One of the leading causes of disability and death is acute ischemic stroke (AIS) brought on by middle cerebral artery (MCA) obstruction. For the best patient care, it is essential to accurately anticipate the functional prognosis in the early stages of stroke. The ability of conventional clinical evaluations and imaging methods to deliver precise and timely prognostic information is frequently limited.; New Method: In this work, a predictive value for predicting functional outcome in patients with acute ischemic stroke caused by MCA blockage was developed utilizing transcranial Doppler (TCD) ultrasonography characteristics. Within 24 h after intravenous thrombolysis (IVT), TCD measures such as pulsatility index (PI), mean flow velocity (Vm), end-diastolic velocity (EDV), and peak systolic velocity (PSV) were assessed. Independent determinants of functional outcome, as determined by the modified Rankin Scale (mRS), were found using logistic regression analysis. These important factors were used to create a prediction model.; Comparison With Existing Methods: Favorable functional outcomes were substantially correlated with a number of TCD characteristics, such as the ratio of pulsatility index to mean flow velocity (rPI) and peak systolic velocity to end-diastolic velocity (rPSV). At three months after a stroke, a logistic regression model that included these measures together with additional clinical indicators showed excellent accuracy in predicting functional prognosis.; Conclusion: In individuals who have experienced an acute ischemic stroke as a result of MCA blockage, TCD ultrasonography parameters-in particular, rPSV and rPI-are useful prognostic indicators for forecasting functional prognosis. Early risk classification and individualized treatment plans can benefit from the creation of a quantitative model based on these criteria. Validating and improving this model in bigger and more varied patient groups should be the goal of future research.; 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.

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30. **Comparative Effectiveness of Exercise on Cardiorespiratory Function or Exercise Efficiency After Stroke: A Network Meta-analysis of Randomized Control Trials**

Authors: Zha, Fubing;Wen, Qiong;Zhou, Mingchao;Shan, Linlin and Wang, Yulong

Publication Date: 2025

Journal: American Journal of Physical Medicine & Rehabilitation

Abstract: Objective: The network meta-analysis was to compare and rank the effectiveness of different exercises on cardiorespiratory function or exercise efficiency in poststroke patients.; Design: A network meta-analysis of randomized controlled trials was conducted. PubMed, Embase, Cochrane Library, and Web of Science were searched. The impact of exercises including individual and combination of aerobic exercise, resistance exercise, task-oriented

training, gait training, breathing exercise, and regular rehabilitation training on 6-min walk test, peak oxygen consumption, maximum oxygen consumption, resting heart rate, resting systolic blood pressure, and resting diastolic blood pressure were assessed.; Results: In total, 36 studies were included in the meta-analysis. Aerobic exercise + GT (63.06%) had the highest likelihood of improving 6-min walk test performance in poststroke patients. Regular rehabilitation training + resistance exercise was the most favorable exercise in terms of 6-min walk test performance assessing by minimum clinically significant difference. Aerobic exercise + resistance exercise had the highest likelihood of improving peak oxygen consumption and reducing resting heart rate in poststroke patients.; Conclusion: Different types of exercise demonstrated the benefits of improving cardiorespiratory function in stroke patients. Further research is needed to determine the best exercise regimen to maximize the benefits of rehabilitation interventions for poststroke patients.; Competing Interests: Financial disclosure statements have been obtained, and no conflicts of interest have been reported by the authors or by any individuals in control of the content of this article.

The feasibility and effectiveness of telecare consultations in a nurse-led post-acute stroke clinic

Authors: Wong AKC, Wang RM, Frances Kam Yuet Wong

Publication date: 2025

Journal*:* BMJ Health & Care Informatics

Abstract

Background: Telecare may provide an alternative to maintaining post-acute stroke care services in making benefit to both the providers and the stroke survivors, although study is needed to investigate its feasibility and effectiveness in integrating this innovative delivery mode into a routine.
