

Food for Thought Fridays

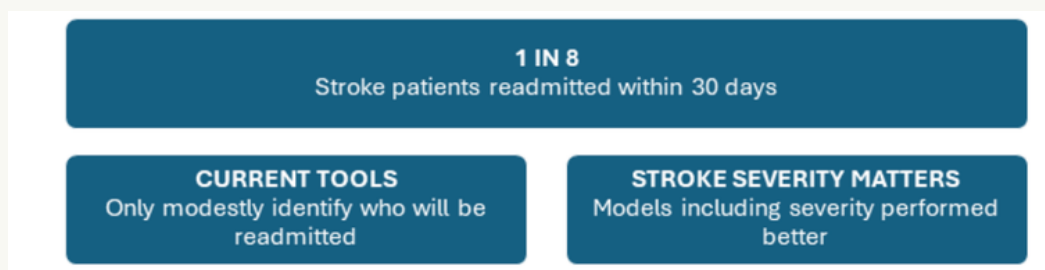
Predicting 30-Day Readmission After Stroke: A Systematic Review and Meta-Analysis to Inform Predictor Selection

Citation: Kalra S, Fakoori F, Shahrestani MN, Xiong Z, Gardener H, Hlaing WM, Gutierrez CM, Perue GG, Asdaghi N, Romano JG, Rundek T, Veledar E. Predicting 30-Day Readmission After Stroke: A Systematic Review and Meta-Analysis to Inform Predictor Selection. *Diagnostics (Basel)*. 2026 May 29;16(11):1685. doi: [10.3390/diagnostics16111685](https://doi.org/10.3390/diagnostics16111685). PMID: 42279554; PMCID: PMC13256663.

The Gist:

This systematic review and meta-analysis examined three questions: **How common is 30-day readmission after stroke? How well do current models predict it? And what factors are being used to make those predictions?** About **1 in 8 stroke patients** was readmitted within 30 days. Current prediction models had only modest ability to identify who would be readmitted, although models incorporating stroke severity performed better.

Important Points:



- The review included **20 studies**; 15 studies comprising **358,434 patients** contributed to the meta-analysis.
- The pooled **30-day readmission rate was 12.9%**; rates were 14.2% for all-cause and 3.6% for stroke-specific readmission.
- Existing prediction tools had only **modest ability to identify who would be readmitted** (pooled AUC 0.69).
- Prediction was better when models included **stroke severity** (pooled AUC 0.74 vs 0.64 without stroke severity).
- **More complex machine-learning methods did not consistently perform better** than traditional statistical approaches.
- Important information, including **functional status, discharge disposition, post-discharge care, and social factors**, was often missing from prediction models, and external validation was rare.

Conclusions

Thirty-day readmission after stroke remains common, and current prediction tools have limited ability to identify which patients will be readmitted. Better prediction may depend on capturing the **right clinical and post-discharge information** rather than simply using more complex prediction methods.

Questions for FSR Stakeholders:

1. Does your hospital currently use a tool or score to identify stroke patients at high risk for 30-day readmission?
2. How consistently are stroke severity and functional status at discharge documented and used when planning post-discharge care?
3. What post-discharge or social-risk factors (e.g., follow-up access, medication adherence, transportation, or social support) are routinely assessed before discharge, and are there additional factors that FSR should consider capturing across hospitals?

Food for Thought Fridays

Stroke Coordinators Perceived Roles, Responsibilities, & Resources: Florida Stroke Registry Insights



Citation: Joy Sessa, Lauri Bishop, Carolina M. Gutierrez, Hannah Gardener, Judith Krigman, Christina Ampie, Valynncea Butler, Ashley Bolling, Farya Fakoori, Tara Hylton, Evie Sobczak, Negar Asdaghi, Tatjana Rundek, Jose G. Romano, Gillian Gordon Perue, On behalf of Florida Stroke Registry. International Journal of Nursing Studies Advances, 2025, <https://doi.org/10.1016/j.jinsa.2025.100432>

The Gist:

Little is known about stroke coordinators' real-world roles, workload, training, resources, and job satisfaction, or how these differ by stroke center size and certification. This study quantifies the wide variation in stroke coordinator responsibilities across Florida sites; highlights a substantial abstraction burden; and identifies common challenges with limited support.

Important Points:

- The Stroke coordinator role is pivotal to a successful stroke system of care. Not only do they drive the system of care changes and provide education, but they may also directly abstract data. How do we support this valuable role of Stroke coordinators in Florida?

Method:

- Surveys were sent to 148 stroke coordinators across 180 hospitals from August–December 2023.

Results:

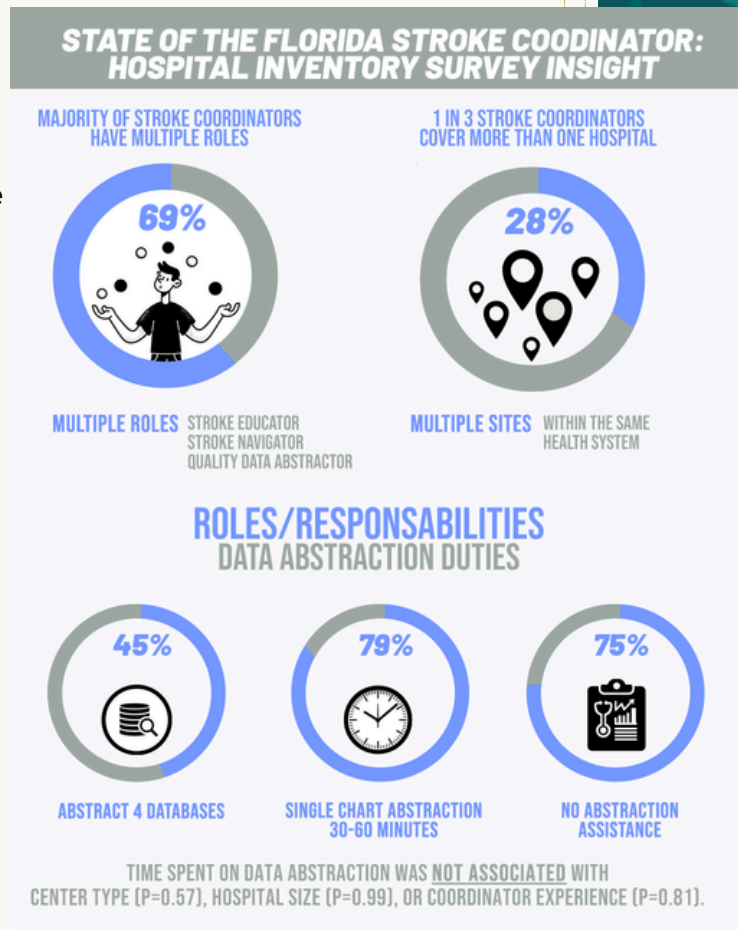
- Responses were received from 25 comprehensive/thrombectomy-capable and 24 primary stroke centers, with some coordinators covering multiple sites.
- Stroke coordinators in their role >5 years were more likely to work in large hospitals (63% vs 29%, $p = 0.02$) and CSC's (75% vs 33%, $p = 0.03$).
- Coordinators in their role >5 years were more likely to have >2 additional duties (69% vs 49%, $p = 0.04$) and less likely to have extra resources (88% vs 67%, $p = 0.05$).
- 61% of stroke coordinators reported dissatisfaction with their training and compensation.

Conclusions

- Stroke coordinators are key assets in driving changes in our stroke system of care. However, they face substantial challenges, including heavy chart abstraction workloads, multiple competing responsibilities, limited resources, and dissatisfaction with training and compensation. These issues undermine stability in the role and may impact overall stroke program performance.
- This is a call to action to support the role of stroke coordinators and to address these gaps by standardizing support based on stroke center size, patient volume, certification level, and coordinator workload.

Questions for FSR Stakeholders:

1. What onboarding or training structures does your hospital have in place for new coordinators, and how could they be strengthened?
2. Given that many coordinators hold multiple additional responsibilities, how does your hospital determine which tasks fall under the coordinator role?
3. How can the FSR further strengthen and support your role as a stroke coordinator?



Food for Thought Fridays

Factors and behaviors related to successful transition of care after hospitalization for ischemic stroke

Citation: Dong C, Gardener H, Rundek T, Marulanda E, Gutierrez CM, Campo-Bustillo I, Gordon Perue G, Johnson KH, Sacco RL, Romano JG; Transitions of Care Stroke Disparities Study (TCSD-S) Investigators†. Factors and Behaviors Related to Successful Transition of Care After Hospitalization for Ischemic Stroke. Stroke. 2023 Feb;54(2):468-475. doi: 10.1161/STROKEAHA.122.040891. Epub 2022 Dec 19. PMID: 36533520; PMCID: PMC9870934.



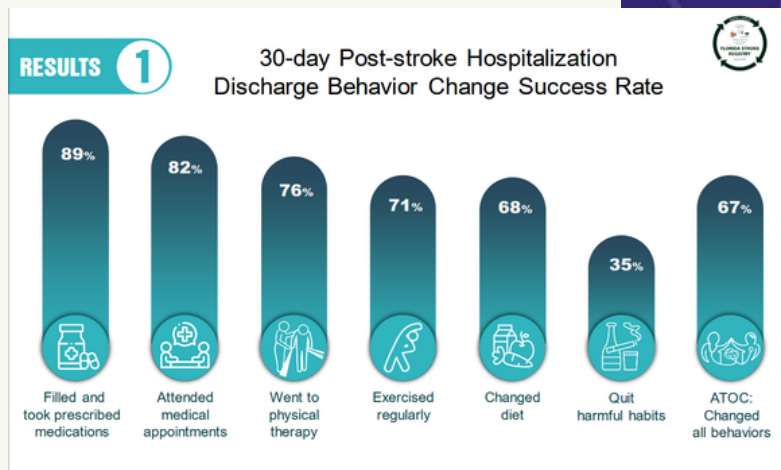
The Gist:

multiple socio-economic factors and pre-stroke comorbid diseases predicted fulfillment of transition of care measures, as well as the overall success in Adequate Transitions of Care (ATOC) post stroke hospitalization.

Important Points:

- In this study 550 acute ischemic stroke survivors (2018-2021) were included: 44% women, 24% Black, 48% White, 26% Hispanic, and 35% foreign-born.
- A structured telephone interview at 30 days post-discharge evaluated outcomes, including six behavioral modifications post-discharge and the overall ATOC measure of patients' adherence to all six behaviors.

- Successful ATOC participants were more likely to be employed full-time, live with a spouse, feel close to 3 or more individuals, have history of dyslipidemia, have thrombectomy, but less likely to have a history of smoking, coronary artery disease, and heart failure.



- No significant difference in ATOC outcomes between pre-pandemic (2018-2019) and pandemic (2020-2021) periods.

One in three patients did not attain adequate 30-day transition of care behaviors. Their achievement varied substantially among different measures and was influenced by multiple socioeconomic and clinical factors. Interventions aimed at facilitating transition of care from hospital after stroke are needed.

Questions for FSR Stakeholders:

- How do you evaluate stroke care transition success in your hospital/region?
- What strategies ensure sufficient discharge education?
- What additional data/research is needed to address stroke care transition disparities?

Food for Thought Fridays

The Association Between Social Networks and Functional Recovery After Stroke

Citation: Bishop L, Brown SC, Gardener HE, Bustillo AJ, George DA, Gordon Perue G, Johnson KH, Kirk-Sanchez N, Asdaghi N, Gutierrez CM, Rundek T, Romano JG. The association between social networks and functional recovery after stroke. *Int J Stroke*. 2025 Jan;20(1):95-104. Epub 2024 Sep 23. PMID: 39215634; PMCID: PMC12230806.



The Gist:

This study examines the impact of different Social Drivers Of Health on functional recovery post discharge, within 90 days after stroke hospitalization. It finds that poor social network is directly associated with increased likelihood of functional decline.

Important Points:

- NIH funded Transitions of Care Stroke Disparities Study prospectively looked at 1,190 stroke patients from 12 Florida Stroke Registry hospitals (2018–2021):
 - Median age of 64, 58% men, 52% non-Hispanic White.
 - 91% ischemic strokes, mostly mild stroke severity (median NIHSS of 2).
- Social Drivers of Health (SDOH) were collected at discharge via interview and included education, language, work status, difficulty paying for care, cohabitation, and social network size.
- Functional recovery was measured with modified Rankin Scale (mRS) at discharge, 30 days, and 90 days. And outcomes categorized as improved, worsened, or unchanged.
- Analyses: LASSO regression model and multinomial logistic regression, adjusting for demographics, stroke features, and vascular risk factors.



Key Findings:

- Small social network (0–2 persons) → significantly higher odds of functional decline at both 30 days (aOR ~1.4–1.6) and 90 days (aOR ~1.5–1.7).
- Living with spouse/partner (LASSO model) or living with children (fully adjusted model) was associated with reduced odds of decline, though results varied across models.
- Other SDOH (education, language, financial strain) were not consistently linked to functional change.

Conclusions

- Stroke survivors with limited social networks are at higher risk of functional decline post discharge, independent of other factors. Strengthening social support through interventions like navigators or community health workers may improve recovery.

Questions for FSR Stakeholders:

1. How does your hospital assess the size and strength of a stroke survivor's social network at discharge to identify those most at risk for decline?
2. What kinds of transitional care resources such as patient navigators, community health workers, or caregiver support programs, could realistically be implemented by your hospital to support patients with limited social networks?
3. How might these findings inform partnerships between health systems, community organizations, and families to build sustainable social support for stroke survivors in the first 90 days post-discharge?

Food for Thought Fridays

The Stroke Meta-metric, Defect-Free Care, was Maintained Year-over-year within the Florida Stroke Registry during the COVID-19 Pandemic

Citation: Rose DZ et.al J Stroke Cerebrovasc Dis. 2025 Feb;34(2):108179. PMID: 39647553; PMCID: PMC11781959.



The Gist:

This study examines the impact of COVID-19 pandemic on stroke care quality in Florida. A review of Defect-Free Care (DFC) among Florida Stroke Registry (FSR) participating hospitals found that despite pandemic-related disruptions, DFC continued to improve year-over-year.

Important Points:

Cohort: 146,593 ischemic stroke or TIA cases collected by the FSR from March 2017–February 2021.

Design: Year-over-year comparison of pre-pandemic (2017–2020) vs. pandemic (2020–2021) in-hospital performance metrics.

Main metric: Defect-Free Care (DFC), a composite of the following 7 factors:

1. **IVT administration:** Arrival within 3.5 hours and treatment within 4.5 hours of symptom onset.
2. **Early antithrombotic use** during hospitalization.
3. **Venous thromboembolism prophylaxis** for eligible patients.
4. **Antithrombotic prescription at discharge.**
5. **Anticoagulation for atrial fibrillation** in patients without contraindications.
6. **Smoking-cessation counseling** documented during the hospital stay.
7. **High-intensity statin therapy** prescribed at discharge for eligible patients

Key Findings: Pandemic stroke patients were more severe (higher NIHSS) and more likely to receive EVT. IVT use and treatment times were unchanged.

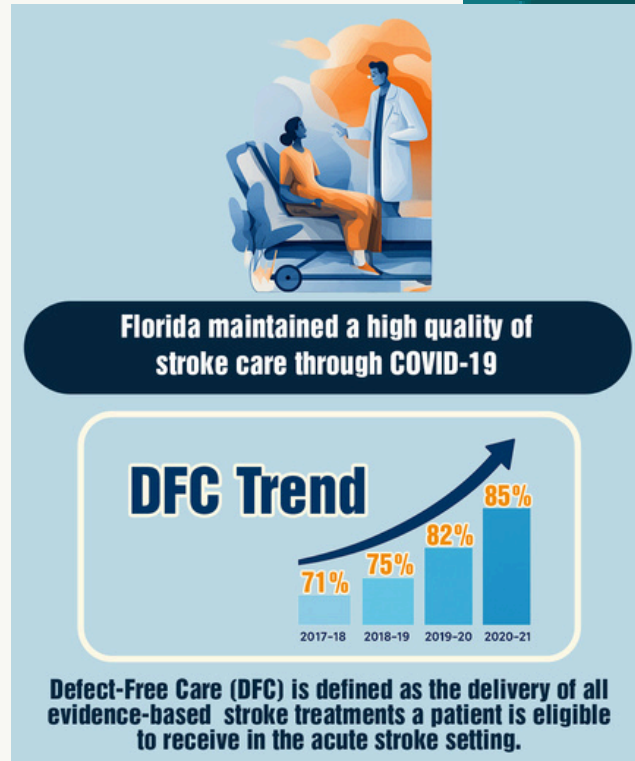
DFC Trend: Improved each year—70.7% (2017–18) → 74.9% (2018–19) → 82.1% (2019–20) → 85.2% (2020–21); showing continued but slower progress during the pandemic.

Conclusions

Stroke care quality in Florida was maintained during COVID-19, reflecting the resilience of statewide stroke systems and coordinated registry efforts.

Questions for FSR Stakeholders:

1. At your hospital, which one of the DFC components are most challenging to improve? and how can targeted QI initiatives address these specific gaps across hospitals?
2. How can the FSR Hospitals leverage this demonstrated resilience during COVID-19 to strengthen statewide preparedness and sustain Defect-Free Care performance during future public health crises?
3. Given the registry's statewide expansion, how can FSR ensure equitable DFC performance across diverse regions, particularly smaller or rural hospitals that may have fewer resources or delayed data reporting?



Food for Thought Fridays

Association of the ICH Score with Withdrawal of Life-Sustaining Treatment Over a 10-Year Period

Citation: Massad N, Zhou L, Manolovitz B, Asdaghi N, Gardener H, Ying H, Gutierrez CM, Jameson A, Rose D, Kottapally M, Merenda A, O'Phelan K, Koch S, Romano JG, Rundek T, Alkhachroum A. Association of the ICH Score With Withdrawal of Life-Sustaining Treatment Over a 10-Year Period. Ann Clin Transl Neurol. 2025 Oct;12(10):1992-2001. doi: 10.1002/acn3.70136. Epub 2025 Jul 2. PMID: 40600687; PMCID: PMC12516225.

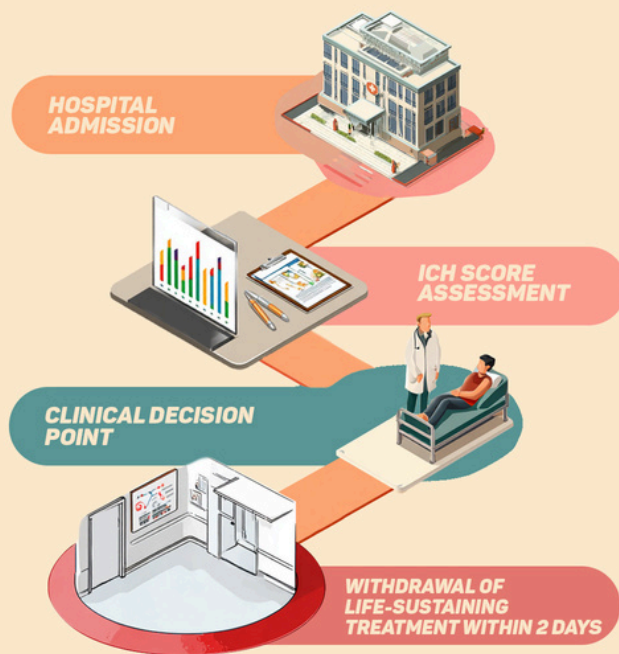


The Gist:

Using 10 years of Florida Stroke Registry data, the study shows that withdrawal of life-sustaining treatment (WLST) after intracerebral hemorrhage (ICH) is very strongly associated with the ICH score, especially at higher scores—and this includes early WLST within 48 hours.

Important Points:

- A total of 60,729 patients with a diagnosis of ICH were included in the FSR between 2013 and 2022. Of these patients, a total of 12,426 (20%) who had documented ICH scores were analyzed to examine the association between ICH score and WLST, including early WLST (<48 hours).
- Outcomes of interest included any WLST, early WLST (<48 hours), and in-hospital mortality.
- WLST occurred in 12.7% of patients with ICH scores 0–2, 58.3% with scores 3–4, and 72.8% with scores 5–6.
- The ICH score was the strongest predictor of WLST, followed by patients Age and hospital region.
- In stratified analyses across both time periods examined, higher ICH score was consistently associated with increased likelihood of WLST and early WLST.



**ICH SCORES:
A TOOL FOR GUIDANCE,
NOT A VERDICT**

Conclusions

In this large, real-world registry of patients with intracerebral hemorrhage, higher ICH score was strongly associated with withdrawal of life-sustaining treatment, including early WLST, and with in-hospital mortality. These associations persisted across time periods, suggesting that prognostic severity continues to play a dominant role in end-of-life decision-making after ICH. The strong coupling between ICH score and early treatment limitation highlights the importance of careful timing, standardized reassessment, and equitable communication to ensure that prognostic tools inform, rather than determine, care decisions.

Questions for FSR Stakeholders:

1. Is your hospital implementing a new ICH alert process? How can this data about the timing of WLST decisions impact your new ICH alert protocol?
2. Does your hospital report on quality data for ICH alerts?
3. Should FSR consider targeted feedback, education, or benchmarking reports to help sites reflect on WLST practices in ICH care?

Food for Thought Fridays

Discharge Communication and the Achievement of Lifestyle and Behavioral Changes Post-Stroke

Citation: Johnson KH, Gardener H, Gutierrez CM, et al. Discharge Communication and the Achievement of Lifestyle and Behavioral Changes Post-Stroke in the Transitions of Care Stroke Disparities Study (TCSD-S). American Journal of Lifestyle Medicine. 2024. doi:10.1177/15598276241294243. PMID: 39540166

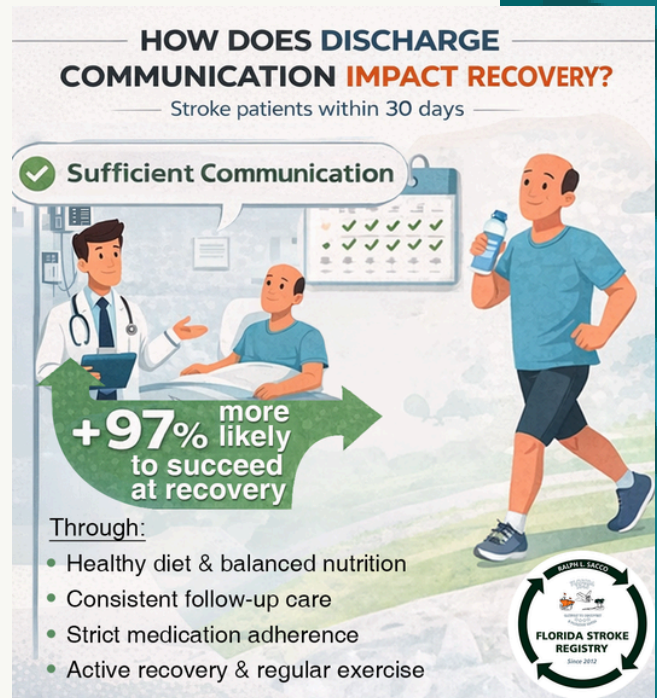


The Gist:

Using data from the Transitions of Care Stroke Disparities Study (TCSD-S) linked to the Florida Stroke Registry (2018–2023), the study shows that patients who perceive discharge communication as sufficient are nearly twice as likely to achieve recommended lifestyle and behavioral changes within 30 days after stroke.

Important Points:

- A total of 1,151 stroke patients discharged home or to rehabilitation from 10 comprehensive stroke centers were included in the analysis. (N = 1151, Average Age 64+/-14 years, 57% Men, 54% NHW, 24% NHB, 23% Hispanic)
- The exposure of interest was Sufficient Discharge Communication (SDC), defined as patient-reported receipt of:
 - Sufficient diet education
 - Sufficient toxic habit cessation education (if applicable)
 - Scheduled follow-up medical appointment at discharge
- The outcome of interest was Adequate Transitions of Care (ATOC), defined as achieving $\geq 75\%$ of recommended post-stroke behaviors within 30 days (diet modification, follow-up attendance, medication adherence, exercise, therapy use, substance cessation).
- Only 31% overall reported SDC; 70% achieved ATOC.
- After full adjustment, patients reporting SDC had a 97% greater likelihood of achieving ATOC
- In race-stratified analyses, SDC was significantly associated with ATOC among Non-Hispanic White (OR 2.76) and Non-Hispanic Black (OR 2.29) patients, driven mainly by diet changes and follow-up attendance.



Conclusions

In this real-world stroke cohort, patients who perceived discharge communication as sufficient were nearly twice as likely to achieve recommended lifestyle changes within 30 days. Improving how discharge education is delivered and understood may enhance early transitions of care and reduce readmissions.

Questions for FSR Stakeholders:

1. How is discharge education currently delivered at your hospital (verbal, written, hybrid, teach-back)?
2. Does your hospital measure patient perception of discharge communication, beyond documentation that education was provided?
3. Does your hospital measure patient perception of discharge communication, beyond documentation that education was provided?

Food for Thought Fridays

Temporal Trends in Vascular Risk Factor Burden Among Young Adults With Ischemic Stroke



Citation: Shoskes A, Zhou L, Ying H, Gardener H, Alkhachroum A, Yin R, Gordon Perue GL, Rose DZ, Jameson A, Bustillo A, Koch S, Marulanda ET, Gutierrez CM, Rundek T, Romano JG, Asdaghi N. Temporal Trends in Vascular Risk Factor Burden Among Young Adults With Ischemic Stroke: The Florida Stroke Registry. *Neurology*. 2025 Mar 25;104(6):e213447. doi: 10.1212/WNL.000000000000213447. Epub 2025 Feb 19. PMID: 39970371; PMCID: PMC11867211

The Gist:

This study examines trends in vascular risk factors among young adults (ages 18–55) who experienced ischemic stroke. It finds that traditional risk factors are increasingly common in this group—especially among Non-Hispanic Black (NHB) and male patients—highlighting the urgent need for earlier prevention efforts.

Important Points:

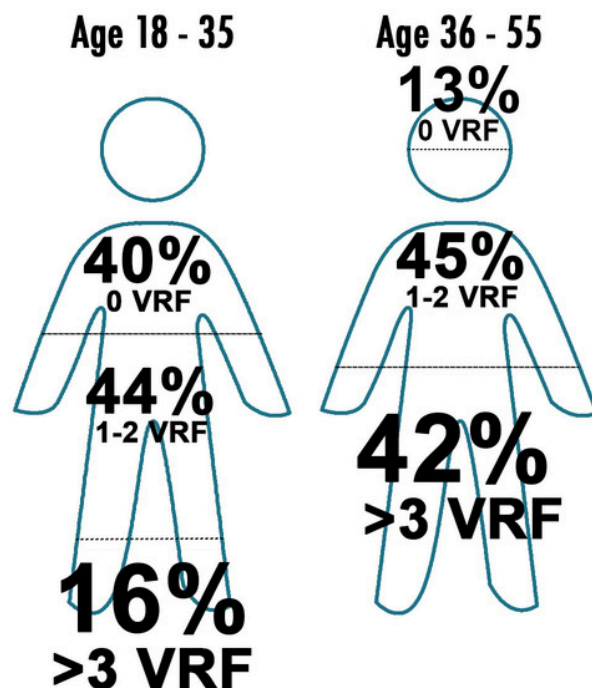
- Stroke in young adults (18–55) is increasingly linked to traditional vascular risk factors (VRFs) like hypertension and diabetes—factors typically associated with stroke in older adults. Because younger patients have historically had different stroke etiologies (e.g., genetic, autoimmune, or structural causes), the growing presence of these age-related VRFs is unexpected. This study shows that from 2014–2022, traditional VRFs significantly increased among young stroke patients in Florida.
- This study involved 36,488 patients of 18–55 years old, experiencing an acute ischemic stroke (AIS), (43% female, median age 49.5, Non-Hispanic White), who were divided into 2 age groups: 3,363 patients aged 18–35 (9%) and 33,125 aged 36–55 (91%).
- VRFs included hypertension, dyslipidemia, obesity, smoking, atrial fibrillation, coronary artery disease, heart failure, diabetes, and sleep apnea. Poly-morbidity was defined as the presence of 3 or more VRFs.
- NHB patients had the highest rates of poly-morbidity in both age groups ($p < 0.001$).
- Males had higher poly-morbidity than females: 38% vs. 34% ($p < 0.001$).
- Trends Over Time (2014–2022):
 - Poly-morbidity increased significantly:
 - 36–55 age group: 35% in 2014 to 42% in 2022 ($p < 0.001$)
 - 18–35 age group: 11% in 2014 to 16% in 2022 ($p = 0.002$)

Conclusion: The burden of multiple traditional VRFs is rising in young stroke patients, calling for earlier and more targeted primary prevention. Efforts targeting early identification and treatment of VRFs for primary prevention of stroke must target young populations to stem the rising tide of stroke in the young.

Questions for FSR Stakeholders:

- How can we better support primary care providers in addressing stroke risk among younger adults?
- What resources or community partnerships could help improve prevention in younger high-risk populations?
- Are there existing public health programs that could be expanded or adapted to target young adults with multiple VRFs?
- How can we better support primary care providers in addressing stroke risk among younger adults?

Rising Vascular Risk Factors Among Young Florida Stroke Patients



Food for Thought Fridays

Gaps in Post Stroke Blood Pressure Medication Prescribing



Citation: Gordon Perue G, Ying H, Bustillo A, Zhou L, Gutierrez CM, Gardener HE, Krigman J, Jameson A, Dong C, Rundek T, Rose DZ, Romano JG, Alkhachroum A, Sacco RL, Asdaghi N, Koch S. Ten-Year Review of Antihypertensive Prescribing Practices After Stroke and the Associated Disparities From the Florida Stroke Registry. J Am Heart Assoc. 2023 Nov 21;12(22):e030272. doi: 10.1161/JAHA.123.030272. Epub 2023 Nov 20. PMID: 37982263; PMCID: PMC10727272.

The Gist:

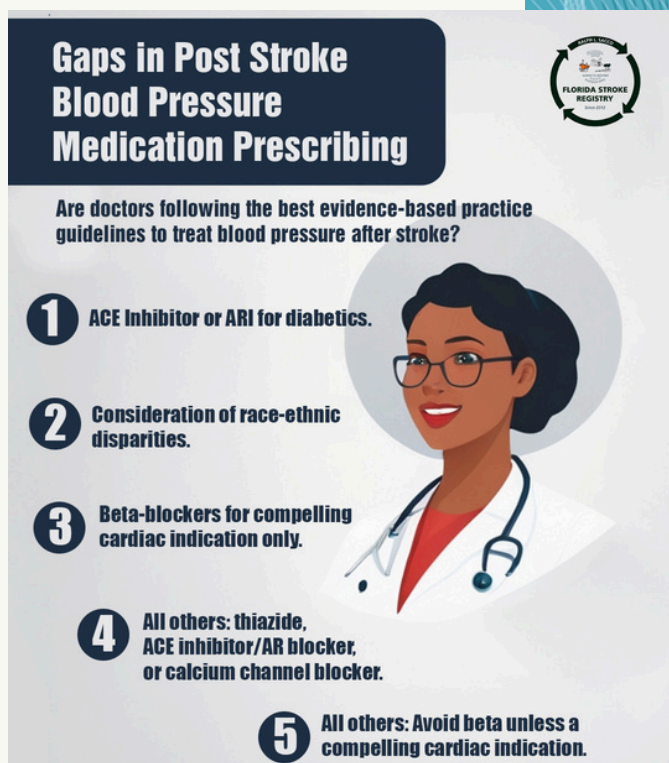
This study examines trends in antihypertensive prescription based on guidelines for post-stroke patients over ten years (2010-2020), revealing notable gaps, especially among Non-Hispanic Black (NHB) patients. It emphasizes the need for better adherence to these guidelines to improve stroke management and outcomes.

Important Points:

- The study involved 265,409 participants with an average age of 70; 50% women, 68.6% Non-Hispanic White (NHW), 17.6% Non-Hispanic Black (NHB), and 13.8% Hispanic. It utilized the 2020 International Society of Hypertension Global Hypertension Practice Guidelines to establish five rules for optimal antihypertensive use:
 1. ACEIs or ARBs as first-line treatment in diabetic patients regardless of race.
 2. Thiazide-type diuretics or calcium channel blockers for NHB patients due to better response and health outcomes.
 3. Beta blockers for patients with coronary issues or other cardiac conditions, as they reduce mortality.
 4. For those not covered by the first three rules, recommend thiazides, ACEIs/ARBs, or calcium blockers.
 5. Avoid beta-blockers as first-line unless there's a specific cardiac reason.
- Despite guidelines, beta blockers appear to be overprescribed among post stroke patients. This trend is unchanged over 5 years whether this is due to some providers' lack of familiarity with current guidelines, time constraints in consultations or documentation problem is unclear.
- Overall, adherence to antihypertensive guideline recommendations was low, ranging from 48% to 74%, falling below the 80% quality standard.
- NHB patients particularly faced significant under-prescription of recommended therapies like diuretics or calcium channel blockers, with only 48.5% receiving these treatments. Hispanic patients also experienced disparities, possibly due to language barriers and cultural differences affecting communication with healthcare providers.

Questions for FSR Stakeholders:

- What challenges have you observed in achieving effective blood pressure management among your patients?
- Were you familiar with these general principles for blood pressure management? How can we verify whether these guidelines are consistently being applied across different regions?
- What measures can be taken to improve follow-up care and patient education on managing hypertension post-stroke?



Food for Thought Fridays

The Effect of 30-Day Adequate Transitions of Acute Stroke Care on 90-Day Readmission or Death

Citation: Johnson KH, Gardener H, Gutierrez C, Marulanda E, Campo-Bustillo I, Gordon Perue G, Brown SC, Ying H, Zhou L, Bishop L, Veledar E, Fakoori F, Asdaghi N, Romano JG, Rundek T; Transitions of Care Stroke Disparities Study (TCSD-S) Investigators. The effect of 30-day adequate transitions of acute stroke care on 90-day readmission or death. J Stroke Cerebrovasc Dis. 2024 Sep;33(9):107842. doi: 10.1016/j.jstrokecerebrovasdis.2024.107842. Epub 2024 Jun 30. PMID: 38955245; PMCID: PMC11347106

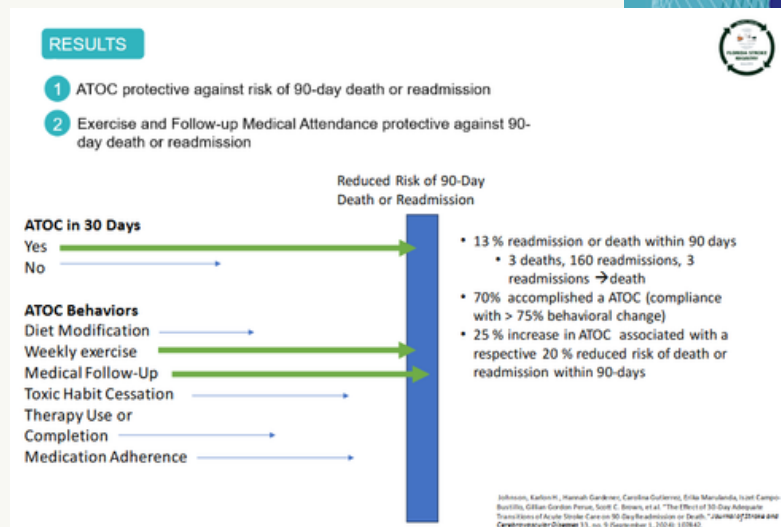


The Gist:

Adequate Transitions of Care (ATOC), a composite score assessing patients' adherence to six categories of behavioral modifications within 30 days post-discharge, is associated with the likelihood of death or readmission within 90 days following stroke hospitalization.

Important Points:

- The Transitions of Care Stroke Disparities Study (TCSD-S) is a prospective multicenter observational study with the goal to reduce race-ethnic and sex disparities in hospital-to-home transitions of care and stroke outcomes.
- The ATOC score is a composite measure of patient-reported participation in six behaviors within 30 days post-discharge: diet modification, weekly exercise, follow-up medical appointment attendance, medication adherence, therapy use, and cessation of toxic habits.
- This study involves a cohort of 1239 ischemic and intracerebral hemorrhage cases (58% male, 52% non-Hispanic White, 22% non-Hispanic Blacks, 22% Hispanics, and 4% other race-ethnicities), from 10 comprehensive stroke centers across Florida. Participants were discharged to home (76%) or rehabilitation facilities and followed up at 30- and 90-days post-discharge. The majority (91%) were diagnosed with Ischemic Stroke, and had average NIHSS of 4.5 at admission.
- The primary outcome was death or hospital readmission within 90 days post-stroke; 13% of participants (n=163) experienced a readmission or death within this period.
- 70% of participants achieved a $\geq 75\%$ ATOC score.
- A 25% increase in ATOC score was associated with a 20% reduced risk of death or readmission within 90 days.
- Specific behaviors, such as weekly exercise and attending medical follow-ups, were linked to reduced risks of adverse outcomes.
- No significant race-ethnic or sex disparities were found in achieving 75% ATOC.
- The ATOC score is a valuable tool for monitoring post-stroke care transitions and can guide interventions to improve outcomes.



Questions for FSR Stakeholders:

- Have you observed challenges ensuring patients adhere to post-stroke care recommendations in your practice or region?
- What strategies have effectively promoted healthy behaviors among stroke patients post-discharge?
- How can healthcare providers better engage patients in care transitions to enhance adherence to recommended behaviors?
- How can findings from the ATOC measure be integrated into healthcare policies to improve patient outcomes and reduce readmissions?

Food for Thought Fridays

The Effect of 30-Day Adequate Transitions of Acute Stroke Care on 90-Day Readmission or Death

Citation: Johnson KH, Gardener H, Gutierrez C, Marulanda E, Campo-Bustillo I, Gordon Perue G, Brown SC, Ying H, Zhou L, Bishop L, Veledar E, Fakoori F, Asdaghi N, Romano JG, Rundek T; Transitions of Care Stroke Disparities Study (TCSD-S) Investigators. The effect of 30-day adequate transitions of acute stroke care on 90-day readmission or death. J Stroke Cerebrovasc Dis. 2024 Sep;33(9):107842. doi: 10.1016/j.jstrokecerebrovasdis.2024.107842. Epub 2024 Jun 30. PMID: 38955245; PMCID: PMC11347106

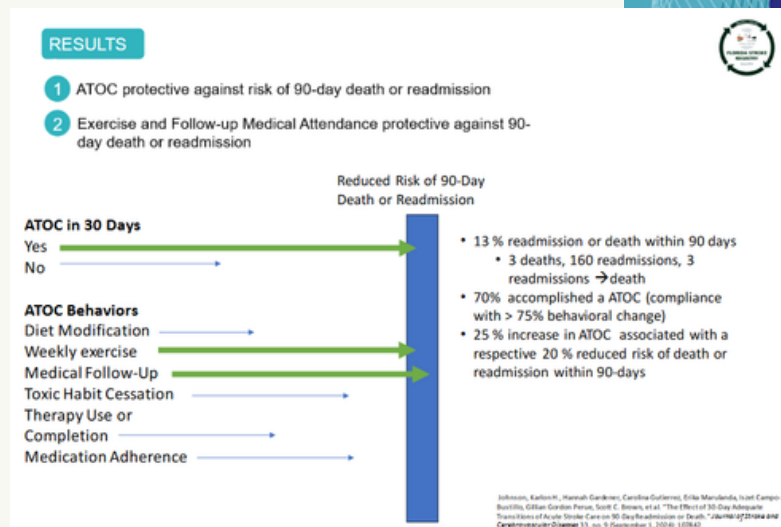


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Food for Thought Fridays

Minimally invasive surgery for lobar ICH: the ENRICH trial

Pradilla G, Ratcliff JJ, Hall AJ, Saville BR, Allen JW, Paulon G, McGlothlin A, Lewis RJ, Fitzgerald M, Caveney AF, Li XT, Bain M, Gomes J, Jankowitz B, Zenonos G, Molyneux BJ, Davies J, Siddiqui A, Chicoine MR, Keyrouz SG, Grossberg JA, Shah MV, Singh R, Bohnstedt BN, Frankel M, Wright DW, Barrow DL, investigators Et, Investigators ET. Trial of early minimally invasive removal of intracerebral hemorrhage. N Engl J Med. 2024;390:1277-1289

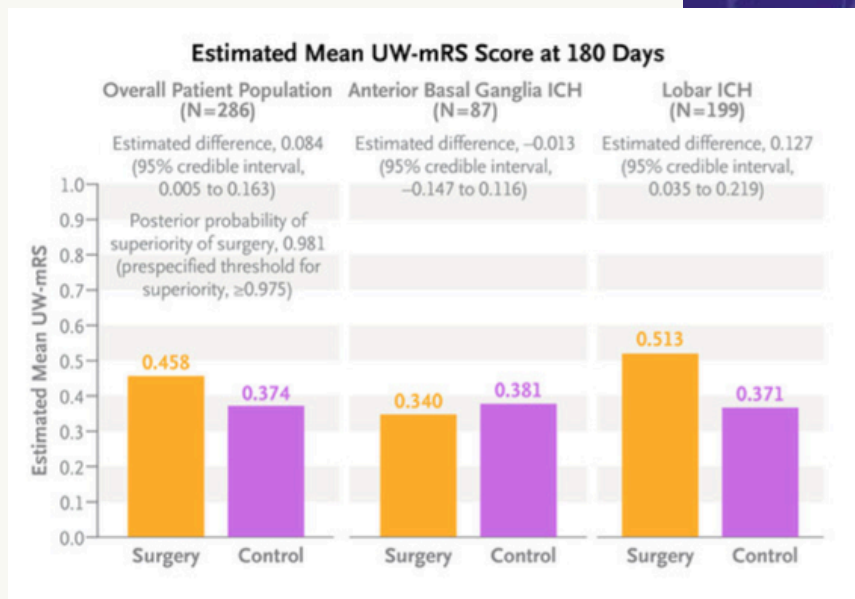


The Gist:

Minimally invasive surgery for evacuation of ICH within 24 hours was associated with improved outcomes at 180 days, particularly for patients with lobar hemorrhage.

Important Points:

- 300 patients with supratentorial lobar and anterior basal ganglia ICH (thalamus and infratentorial ICH excluded): median age 63 years, 50% female, 69% lobar.
- Hematoma volumes included 30-80 mls. Patients with extensive intraventricular hemorrhage were excluded.
- Randomized to medical management only versus minimally invasive surgical hematoma evacuation within 24 hours plus medical management.
- After 175 patients enrolled, basal ganglia ICH surgical evacuation was considered futile, only lobar ICH enrolled thereafter.
- There was a significant benefit for mean between group differences for lobar ICH only.
- Mortality was lower in the surgical arm.
- The percentage of mRS 0-3 was greater in the surgical arm.
- Postoperative rebleeding with neurological deterioration occurred in 5 patients (3.3%).



The results of the ENRICH trial are practice-changing, particularly for patients within 24 hours of lobar ICH without extensive intraventricular hemorrhage.

Questions for FSR Stakeholders:

- Does your site have the capability of performing minimally invasive hematoma evacuation?
- How will your site implement protocol changes to provide minimally invasive surgery for patients with ICH who meet the criteria?

Food for Thought Fridays

Two Decades of Stroke Incidence Trends by Race

Madsen, TE, Ding L, Khoury JC, Haverbusch M, et al. Trends Over Time in Stroke Incidence by Race in the Greater Cincinnati Northern Kentucky Stroke Study, *Neurology*, 2024. 102:e208077. doi:10.1212/WNL.0000000000208077



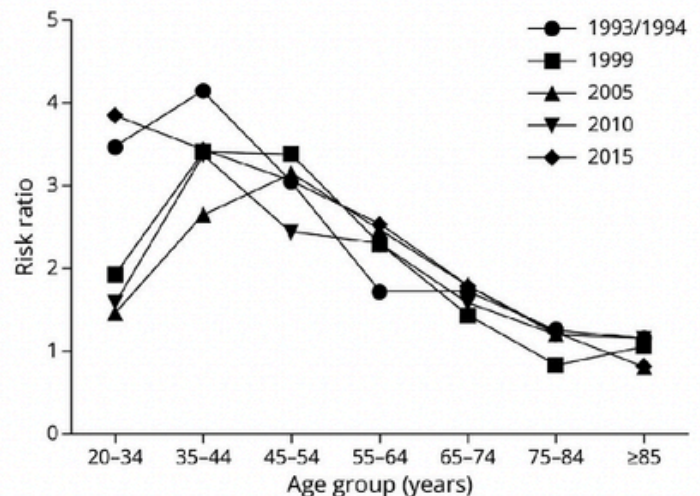
The Gist:

Overall stroke incidence among White and Black individuals is decreasing over time; however, Black patients had a higher incidence relative to White patients, especially in the young and middle age groups.

Important Points:

- Surveillance study of a 5-county population: The Greater Cincinnati Northern Kentucky Stroke Study
- Temporal trends in stroke incidence were evaluated by race and stroke subtype from 1993 to 2015
- The overall incidence rate for any stroke and ischemic stroke decreased over time, from 215 to 170 per 100,000 over the 22-year study period
- ICH incidence was stable over time overall and in each race subgroup
- SAH incidence decreased over time overall and in the White subgroup
- In the Black adult population, incidence rates were higher overall compared to white subgroups, especially in young and middle-aged subgroups
- 30-day case fatality rates decreased over time in the SAH group and otherwise remained stable for ischemic stroke and ICH over the study period.

Figure Risk Ratio (Black:White) for Stroke of Any Type by Age Group, Hospital Ascertainment Only, and Stratified by Time Period



Risk ratios calculated using Black and White stroke incidence (per 100,000). Estimates are age-adjusted and sex-adjusted to the 2010 US population. Any type includes incident IS, ICH, SAH, or stroke of unknown type. ICH = intracranial hemorrhage; IS = ischemic stroke; SAH = subarachnoid hemorrhage.

Conclusion:

Despite the encouraging finding of decreasing stroke incidence overall in the last 2 decades, it appears that racial disparities continue to persist with higher incidence of stroke in the Black population.

Questions for FSR Stakeholders:

- How do you use your FSR Annual Hospital Dashboard? Share your successes with us if you have used the FSR disparities dashboard as a part of your quality improvement efforts.
- What specific interventions are utilized by your hospital to ensure equitable delivery of treatment and preventive care?

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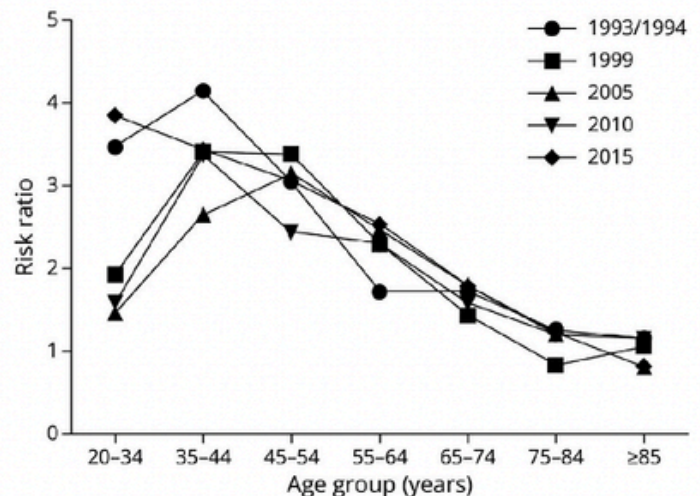
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Food for Thought Fridays

Association of Alternative Anticoagulation Strategies and Outcomes in Patients With Ischemic Stroke While Taking a Direct Oral Anticoagulant

Yiu Ming Bonaventure Ip, MD, Kui Kai Lau, DPhil, Ho Ko, PhD, Lucas Lau, MS, Alan Yao, MS, Grace Lai-Hung Wong, MD, Terry Cheuk-Fung Yip, PhD, Xinyi Leng, PhD, Howard Chan, PhD, Helen Chan, BSc, Vincent Mok, MD, FRCP, Yannie O.Y. Soo, MD, David Seiffge, MD,* and Thomas W. Leung, MD*

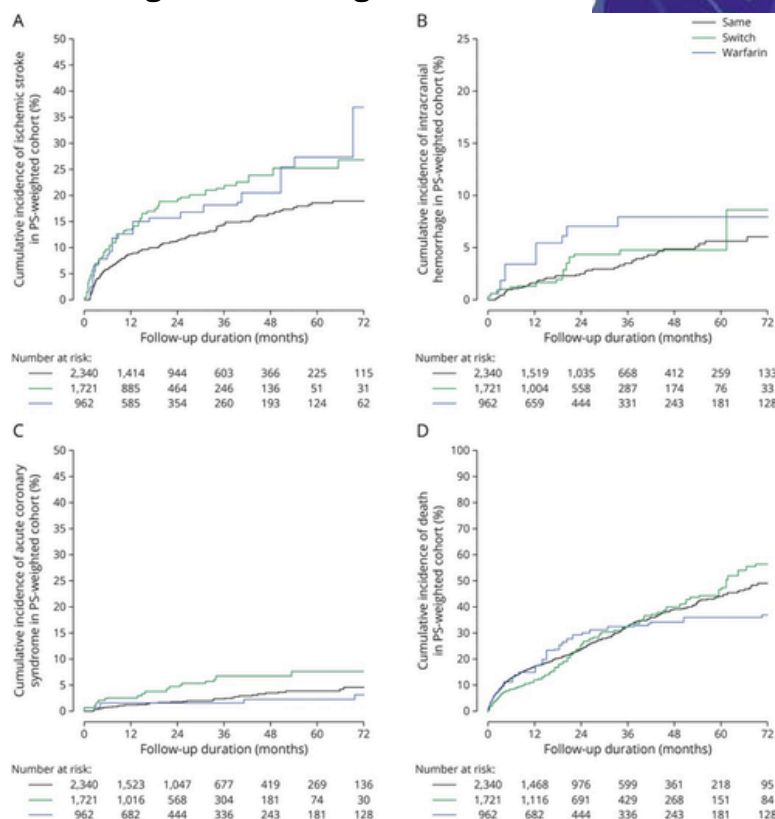


The Gist:

In patients with ischemic stroke - despite anticoagulation for atrial fibrillation (AF), continuing the same DOAC (direct oral anticoagulant) was more effective than switching to a different DOAC or to warfarin for stroke prevention.

Important Points:

- Prospective cohort study of 2,337 patients with AF who developed ischemic stroke despite DOAC
- Mean follow up 16.5 months with various anticoagulation strategies:
 - DOAC → same DOAC
 - DOAC → different DOAC
 - DOAC → warfarin
 - DOAC → same DOAC + antiplatelet
- Overall stroke recurrence was 13.4% during follow up
- Compared to continuing the same DOAC
 - Switching to a different DOAC was associated with 62% higher odds of recurrent stroke (adjusted HR (aHR) 1.62, $p < 0.001$)
 - Switching to warfarin was associated with nearly double the risk of recurrent stroke (aHR 1.96, $p = 0.002$)
 - Adjunctive therapy with an antiplatelet and keeping the same DOAC was not associated with reduced risk of recurrent stroke
- Switching to a different DOAC was associated with 2-fold higher risk of acute coronary syndrome compared to keeping the same DOAC.
- Intracranial hemorrhage and mortality were similar between different anticoagulation strategies.
- Diabetes mellitus, large artery atherosclerosis and concurrent use of CYP450/P-glycoprotein modulators were predictors of recurrent stroke.



Questions for FSR Stakeholders:

- What is your anticoagulation strategy for patients with ischemic stroke despite DOAC treatment for AF?
- What factors do you consider when deciding the appropriate anticoagulation strategy in these patients?

Food for Thought Fridays

Apixaban for Stroke Prevention in Subclinical Atrial Fibrillation



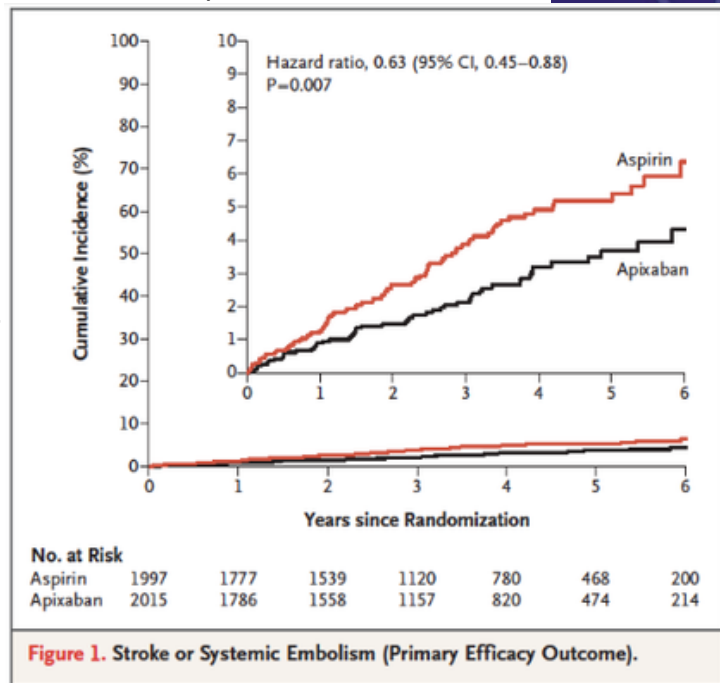
J.S. Healey, R.D. Lopes, C.B. Granger, M. Alings, L. Rivard, W.F. McIntyre, D. Atar, D.H. Birnie, G. Boriani, A.J. Camm, D. Conen, J.W. Erath, M.R. Gold, S.H. Hohnloser, J. Ip, J. Kautzner, V. Kutyla, C. Linde, P. Mabo, G. Mairesse, J. Benzeat Mazuecos, J. Cosedis Nielsen, F. Philippou, M. Proietti, C. Sticherling, J.A. Wong, D.J. Wright, I.G. Zarraga, S.B. M. Pombo, F. Ayala-Paredes, L. Xu, K. Simek, S. Nevills, R. Mian, and S.J. Connolly, for the ARTESIA Investigators*

The Gist:

Apixaban was associated with significantly reduced risk of stroke in patients with subclinical atrial fibrillation (AF) lasting 6-24 hours compared with aspirin; however, the risk of major bleeding was higher with apixaban.

Important Points:

- Patients with subclinical AF (n=4012), defined as asymptomatic and lasting 6 mins to 24 hours, were randomized to receive apixaban 5 BID (or 2.5mg BID when indicated) versus aspirin 81mg daily for stroke prevention.
 - Double-blind, double-dummy design
 - Mean age 77 years, mean CHA2DS2 VASc 4, mean follow up 3.5 years
 - 60% of the cohort had AF 6 min to < 6 hours 6 months prior to randomization
- Primary efficacy outcome was stroke or systemic embolism
 - Lower by 37% with apixaban than with aspirin
 - HR 0.63 (95% CI 0.45-0.88) favoring apixaban
 - Risk of disabling or fatal stroke was 49% lower with apixaban
- Primary safety outcome was major bleeding
 - Odds of major bleeding was 36% higher with apixaban
 - HR 1.36 (95% CI 1.01-1.82)
 - Fatal bleeding and ICH were numerically lower with apixaban
- The authors argue that the clinical severity of the stroke events prevented was greater than the bleeding events caused, as most bleeding events were treated with supportive measures and were reversible.
- Limitations
- Generalizability à 94% White European patient population, 36% female
- High rate of trial drug discontinuation
- Approximately 24% had trial drug discontinuation due to subclinical AF lasting > 24 hours during the study period



Questions for FSR Stakeholders:

- What is your approach with secondary stroke prevention in patients with device-detected AF lasting < 24 hours with high-risk CHA2DS2-VASc scores?
- What specific factors do you consider when deciding on anticoagulation in patients with device-detected subclinical AF?
- What is your experience with patient attitudes regarding anticoagulation during the shared decision-making process?

Food for Thought Fridays

Disparities in Transitions of Acute Stroke Care: The TCSD-S Methodological Report



Citation: Johnson KH, Gardener H, Gutierrez C, Marulanda E, Campo-Bustillo I, Gordon Perue G, Hlaing W, Sacco R, Romano JG, Rundek T; Transitions of Care Stroke Disparities Study (TCSD-S) Investigators. Disparities in transitions of acute stroke care: The transitions of care stroke disparities study methodological report. J Stroke Cerebrovasc Dis. 2023 Sep;32(9):107251. doi: 10.1016/j.jstrokecerebrovasdis.2023.107251. Epub 2023 Jul 12. PMID: 37441890; PMCID: PMC10529930.

The Gist:

The Transitions of Care Stroke Disparities Study (TCSD-S) aims to highlight racial and sex disparities in stroke care transitions post-hospital discharge. Preliminary analysis identifies a younger population of non-Hispanic Black stroke patients and highlights sex disparities in receiving sufficient discharge stroke education and in achieving adequate transitions of care.

Important Points:

- The study seeks to identify any race-ethnic and sex disparities in post-hospital transitions of stroke care and stroke outcomes and to develop hospital-level initiatives to reduce these disparities and improve stroke outcomes.
- The transitions of stroke care performance index (TOSC PI) define the successful transition of stroke care and will serve as an evaluation tool to detect disparities and measure relationships with outcomes, including readmission.
- Six individual TOSC measures will contribute to the overall TOSC PI score, ranging from 0% to 100%. Successful transition of care is defined as achieving 100% adherence to all applicable TOSC measures within 30 days post-discharge (TOSC PI score of 100%).
- The preliminary sample included data from 1048 ischemic stroke and intracerebral hemorrhage (≥ 18 years old) discharged from 10 comprehensive stroke centers across the state of Florida. (45%female, 22%Non-Hispanic Black, and 21% Hispanic, with an average age of 64 ± 14 years old), while this age range for non-Hispanic Black patients was younger (58 ± 13 years)
- Women were less likely to report having sufficient discharge education (24% female vs 33%male, $P=0.004$).
- At 30 days, 62% of participants achieved at least 75% adequate transitions of care (75% TOSC PI), but only 29% achieved 100% adequate transitions of care (100%TOSC PI). Additionally, women were less likely to attain 100% adequate transitions of care when compared to men (25%vs31%, $P=0.03$).
- Achievement of at least 75% adequate transitions of care significantly reduced the likelihood of 30-day all-cause death, readmission, or hospital/ER representation: 7.4% vs. 15% in the less than 75% group ($p<0.0001$).
- The racial and sex differences in all-cause 30 and 90-day death, readmission, or hospital/ER representation in the preliminary analysis were insignificant. Additional analyses will need to evaluate further the trends of race-ethnic and sex differences in systems of care and determine the main drivers of disparities in transitions of stroke care and stroke outcomes.

Questions:

- Have you experienced challenging transitions of care after stroke hospitalizations in your region?
- If so, what were your challenges? Are they like those identified in TCSD-S?
- How have you managed these challenges?

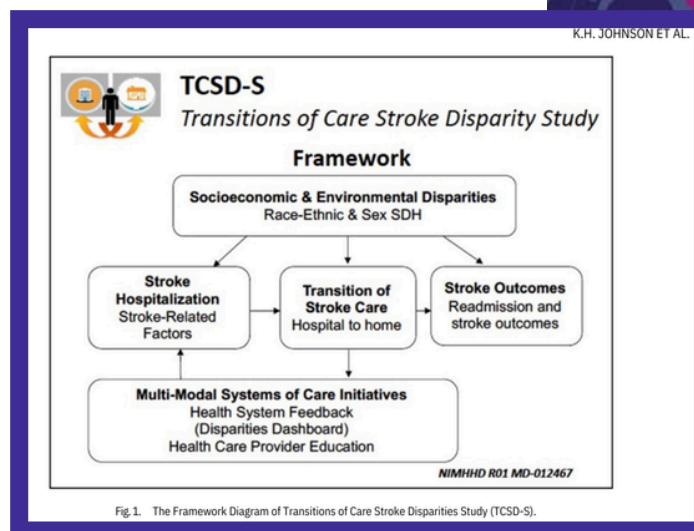


Fig. 1. The Framework Diagram of Transitions of Care Stroke Disparities Study (TCSD-S).

Food for Thought Fridays



Impact of Time to Treatment on Endovascular Thrombectomy Outcomes in the Early Versus Late Treatment Time Windows

Citation: Negar Asdaghi, MD, MSc, Kefeng Wang, MSc, Hannah Gardener, ScD, Angus Jameson, MD, MPH, David Z. Rose, MD, Ayham Alkhachroum, MD, Carolina M. Gutierrez, PhD, Hao Ying, MSc, Nils Mueller-Kronast, MD, Nicole B. Sur, MD, Chuanhui Dong, PhD, Gillian Gordon Perue, MD, Marissa LePain, MBA, RN, Sebastian Koch, MD, Nastajia Krementz, MD, Erika Marulanda-Londoño, MD, MSc, Ricardo Hanel, MD, PhD, Brijesh Mehta, MD, Dileep R. Yavagal, MD, Tatjana Rundek, MD, PhD, Ralph L. Sacco, MD, MSc, Jose G. Romano, MD, for the Florida Stroke Registry. <https://doi.org/10.1161/STROKEAHA.122.040352>

The Gist:

This study examines the association between onset-to-puncture (OTP) time among ischemic stroke patients who received EVT, and discharge outcomes and treatment complications. It found that increased time from symptom onset to treatment is significantly associated with a lower likelihood of independent ambulation and discharge to home following EVT.

Important Points:

- The diagram below describes the cohort. Overall 50.9% were female, with a median age of 71.5 years; 61.7% were White, 17.5% Black, and 21% Hispanic.

8,002 total ischemic stroke patients

(treated with EVT within 24hrs onset of symptoms, enrolled from FSR hospitals between January 2010-April 2020)

Early treatment
(Onset-to-Puncture time ≤6 hours): **65.8%**

Late treatment
(Onset-to-Puncture time >6 to ≤24 hours): **34.2%**

Outcome measures among all EVT patients

- 32.4% discharged home
- 23.5% discharged to rehabilitation facility
- 33.7% ambulated independently at discharge
- 5.1% had symptomatic intracerebral hemorrhage
- 9.2% died

- As compared with the early window, treatment in the late window was associated with lower odds of independent ambulation (odds ratio [OR], 0.78 [0.67–0.90]) and discharge home (OR, 0.71 [0.63–0.80]).
- Compared to patients treated within 6 hours of stroke onset (early window), those treated later (6–24 hours) had significantly lower odds of: Independent ambulation at discharge (OR=0.78; 95% CI, 0.67–0.90) and being discharged home (OR=0.71; 95% CI, 0.63–0.80).
- Every **60-minute delay in treatment impacted the two groups as follows:**
 - The **early window:** each hour of delay was associated with **8% lower odds** of independent ambulation (OR=0.92; $P<0.001$), and **10% lower odds** of discharge home (OR=0.90; $P<0.001$).
 - The **late window:** 60-minutes delays had a much smaller and not statistically significant impact: 1% reduction in ambulation (OR=0.99; $P=0.5$), and 2% reduction in discharge home (OR=0.98; $P=0.11$)

Conclusion:

In routine practice, just over one-third of EVT-treated patients ambulate independently at discharge, and only half are discharged home or to a rehabilitation facility. Longer time from symptom onset to treatment is significantly associated with lower chances of independent ambulation and discharge home in the early time window.

Questions for FSR Stakeholders:

- How can we further streamline workflows to reduce onset-to-puncture (OTP) time, especially in the early window?
- Are there any current bottlenecks in EMS transport, triage, or imaging that delay EVT access in your hospitals?
- How consistently are eligible patients being identified for EVT within the early window across FSR sites?

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