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From: NJ Stroke Care Advisory Panel
Date: July 09, 2026
Subject: Pre-Hospital Stroke Triage Recommendation

Recommendation: The Stroke Care Advisory Panel (SCAP) strongly recommends implementation of the American Heart Association (AHA)/ American Stroke Association (ASA) Stroke System of Care – specifically that patients with suspected large vessel occlusion strokes be taken directly to comprehensive stroke centers whenever feasible, bypassing hospitals with lower designations, in accordance with transport time windows described in the cited document and below.

Executive Summary:

Over the past year, key elements required to advance New Jersey's Stroke System of Care have fallen into place. After extensive discussion, including with key stakeholders, the SCAP recommends an essential next step – improving pre-hospital triage of patients with severe strokes to centers most able to help them, saving precious minutes in the 'time is brain' equation. The current system works well for patients with the most common form of stroke – small artery occlusions, for which clot dissolving drugs provide the only effective treatment. However, key advances in the past decade have shown that mechanical interventions – clot removal via intravascular catheters, performed at comprehensive (**CSC**) or thrombectomy-capable (**TSC**) stroke centers - are superior for the more devastating large vessel occlusion (**LVO**) strokes – and that these are as time sensitive as other stroke interventions. Addressing the time lost in transporting first to a lower-level stroke center, then transferring to a CSC, is the next major opportunity to improve outcomes. To this end, we recommend implementation of the model presented in the consensus Guideline developed by the American Heart/American Stroke Association, in concert with multiple other expert organizations, published as *Recommendations for Regional Stroke Destination Plans in Rural, Suburban and Urban Communities* (Stroke 2021; 52:e133-e152).

Specifically, EMS should use the RACE clinical score to identify patients likely to have LVO strokes, and take them directly to a **CSC**, or, under limited circumstances, to a **TSC**, bypassing Primary Stroke Centers (**PSCs**).

Key prerequisites that are now in place:

1. *Demonstration of competence performing thrombectomies by designated stroke centers.* These resource-intensive procedures are available at a limited number of centers – designated as either CSCs or TSCs. As required by the 2020 Stroke Act, 62 of the 66 State designated stroke centers are certified through either The Joint Commission, DNV or ACHC and are undergoing regular review and recertification. In 59 the 62 State designated centers, State designations and certification levels are fully aligned, in two centers the state designation is higher than the certification, and in one center it is lower. Two of the State designated centers are currently seeking recertification. Two of the State designated centers no longer provide stroke services. One stroke center is certified but not State designated. Specifically, 12 of the 13 NJ-designated CSCs, are certified CSCs; one (Morristown) is certified TSCs.

Importantly, only CSCs must document proficiency managing the most deadly strokes – intracranial hemorrhages (**ICH**) - and must have neurosurgery available 24/7 to provide necessary care - and are consequently the recommended sites for management of these. This competence is not assessed at, or required of, TSCs – the major difference between the two.

2. In accord with the recommendation of the SCAP and Medical and Interfacility Communications (MIC) Council, and Commissioner Persichilli's order (21-008), pre-hospital providers have now broadly adopted the Rapid Arterial occlusion Evaluation (RACE) score, a clinical tool that helps differentiate between small and large artery strokes with scores 5 or greater suggesting LVO. Notably, the state's three largest health systems have largely implemented this and are already using it to triage LVO strokes to advanced centers.
3. Pilot data from these three health systems indicate implementation of bypass is feasible, has a very limited net impact on patient volumes at each center, and improves time to treatment. Importantly, these pilot efforts have confirmed a major limitation of the RACE score – predictable on clinical and epidemiologic grounds and confirmed in the medical literature. While it correctly differentiates between small and large artery strokes, it is less effective at differentiating between ICHs and LVOs, as a result of which about one-third to one-half of patients meeting LVO clinical criteria actually have ICHs and, therefore, are most appropriately cared for at CSCs.
4. After addressing the Stroke Act's HIPAA-related requirements, the New Jersey Department of Health (NJDOH) is now able to collect data on performance and outcomes at all NJ Stroke Centers.
5. Input was received from the EMS and MIC Councils and the groups they represent; all strongly endorsed implementation.
6. Therefore, we strongly recommend implementation of the following bypass protocol statewide, with the understanding that exceptions will be necessary to allow for: (i) local

agency protocols; (ii) current traffic conditions; (iii) more challenging geographies; and (iv) possible Emergency Department divert status:

- a. For patients with a RACE score 5 or greater, last known well 24 hours or less, taking into consideration anticipated traffic conditions and local protocols, advise EMS:
 - **If** total transport time from scene to CSC 30 minutes or less,
 - Go directly to CSC.
 - **If no CSC** within 30-minute transport time AND total transport time from scene to TSC 30 minutes or less
 - Go directly to TSC.
 - **If no TSC or CSC within 30-minute total travel time,**
 - Go to an accessible, appropriate, designated stroke center, regardless of level, as quickly as feasible.
 - If no designated stroke center accessible within 30 minutes, consider air transport.

Background

“Stroke” refers to an acute event damaging brain blood vessels, causing damage to related brain areas. About 15% of strokes are due to rupture of a brain artery, causing an intracranial hemorrhage (ICH). Eighty-five percent are ischemic – due to a blocked artery, interrupting blood flow to dependent brain areas, with attendant death of irreplaceable brain cells, a process that evolves over minutes to hours. Between one-quarter and one-half of ischemic strokes are due to blockage of a large artery, the remainder small arteries. The amount of brain at risk is related to the size of the affected artery.

The first intervention shown to be effective at minimizing the amount of brain damage in ischemic stroke was the clot dissolving (thrombolytic) drug tPA (alteplase, now often replaced by tenecteplase). While this is effective in all ischemic strokes, the development of devices that can be inserted into larger brain arteries to successfully and safely remove the clots has now been shown to be superior in LVOs. These procedures require highly sophisticated equipment with well-trained interventionalists and teams – resources only available in a subset of highly resourced medical centers.

With the development of these tools, a number of organizations, most notably the American Heart/American Stroke Association, in partnership with the Joint Commission, and mirrored by Det Norke Veritas (DNV), established metrics and measurement tools to assess the capabilities of stroke centers. This allowed the creation of a range of stroke center designations – from Acute Stroke Ready (ASR; identify treatment candidates, administer thrombolytics as appropriate, then transfer), Primary Stroke Centers (ASR plus provide appropriate post-treatment care, transferring patients who are potential thrombectomy candidates and ICHs), Thrombectomy Capable (PSC plus provide thrombectomies and appropriate post-procedure care, transferring ICHs) and Comprehensive (TSC plus care for intracerebral hemorrhages, including 24/7 neurosurgery

availability). Importantly, management of the less frequent but more lethal ICHs requires neurocritical care and highly skilled neurointerventional and neurosurgical teams, with skill sets different from those expected and assessed at TSCs. The rationale for TSCs was that there are regions of the country in which no centers have the full range of resources to be a CSC, but a TSC could provide care for LVO ischemic strokes.

The first step in providing care to stroke patients is early identification of individuals who may be having a stroke and getting them rapidly transported to a stroke center. Several clinical assessment scales have been developed to accomplish this. New Jersey has largely adopted the BE-FAST—**B**alance, **E**yes, **F**ace, **A**rms, **S**peech, and **T**ime— scale, a tool now used by most Basic Life Support (BLS) and Advanced Life Support (ALS) squads in the state. The initial model was to bring all potential stroke patients to a nearby stroke center where further evaluation could be performed, with possible LVOs and hemorrhages identified and transferred to CSCs. However, the near universal observation is that the turnaround time in ERs is (still) about two hours – both because of the needed testing and because a second ambulance must arrive to transport the patient to a more advanced center. In light of this, an alternative model has been developed with pre-hospital providers using a second, more complex clinical screening tool in patients suspected of having strokes – in NJ the RACE score – that is quite effective at separating LVOs from smaller strokes, allowing *initial* transport of likely LVO patients directly to advanced centers. One shortcoming of these scales is they are less effective at distinguishing between ICH and LVO strokes. Empiric evidence in New Jersey, consistent with observational data in the medical literature, suggests about one-third of patients thought to have LVOs actually have ICHs. Since TSCs are capable of providing thrombectomies, but do not have to demonstrate proficiency managing ICHs, or provide the necessary resources, this would, in theory, require they assess and then transfer ICHs, delaying these patients' care.

Notably, the state's three large health systems – Hackensack Meridian Health (HMHS), RWJ Barnabas Health (RWJBHS) and Atlantic Health (AHS) – have largely adopted the bypass model. Preliminary findings suggest the net shift in patient volume is small, with more small artery stroke patients going to PSCs and more LVO patients going to CSCs with an overall significant decrease in time to treatment.

Current State in New Jersey:

1. Observational data suggest the RACE score has been widely and successfully implemented around the state for LVO screening.
2. There are 14 NJ-designated Comprehensive Stroke Centers (CSCs), of which 11 are certified by Joint Commission or DNV. Two (Morristown, Valley) are certified as Thrombectomy Capable Centers (TSCs), one (Cooperman Barnabas) as a Primary Stroke Center (PSC). These three have not yet updated their state designations but are likely in the process of doing so.
3. Two (Mountainside, Christ) are certified and designated as TSCs; three are certified as TSCs (Lourdes, Morristown, Valley) but not yet NJ-designated as such.

4. The AHA/ASA Guideline (Stroke 2021; 52(5): e133-e152) provides recommendations for acceptable transport times, with the general concept being to go directly to a CSC, bypassing all lower level centers, whenever expected transport time to the CSC is 30 minutes or less (detail in Appendix B), with slightly longer times allowable in suburban and rural areas. Mapping expected transport times around New Jersey demonstrated a few areas in the Western and Southern parts of the state that are within 30 minutes of a TSC but outside that radius for a CSC. Otherwise, there is near-complete overlap with CSCs reachable within the requisite 30 minutes. Of the five certified TSCs, two (Mountainside, Christ) are about 30 minutes from the nearest CSC; all others are within <15 minutes of the nearest CSC (see maps, Appendix A). Because of this, and the fact that about 95% of New Jersey is considered urban, we recommend following the recommendations for urban areas statewide, to the fullest extent possible.
5. HMHS, RWJBHS and AHS have implemented bypass in their systems. The net effect in Southern HMHS is a shift of 1-2 patients/week to a CSC. Of patients with RACE score 5 or greater, about half are intracerebral hemorrhages (ICH), half LVO. RWJBHS has similarly been bypassing, with about 205 bypasses for RACE score 5 or greater in the past two years (two/week). Of these, one-third do not have a major stroke; of the remainder, two-thirds have LVOs and one-third cerebral hemorrhages. The large number of ICHs is critically important as CSCs are certified to manage these; TSCs are not.
6. The SCAP Chair has presented the bypass model at both the EMS Council (March 13, 2024) and the MIC Council (June 3, 2024). Both strongly endorsed the proposed bypass model and urge prompt implementation.
7. The NJ Stroke Coordinators Consortium strongly endorses the bypass model.

Guiding principles for recommendations

Recommendations should:

1. Aim to provide the best possible care to NJ's stroke patients by directing them to the centers best able to provide their care.
2. Be based on broadly accepted, evidence-based national guidance.
3. Have effects that are measurable and measured to determine benefit and impact.
4. Be advisory/guidance, not prescriptive or mandatory, allowing for atypical situations such as patient insistence, severe traffic, etc., but requiring that EMS document reasons for such variation.
5. Recognize that transport conditions vary widely around the state, dependent both on weather- and time-of-day-related traffic and local geography and proximity to various levels of stroke care. In light of this, and in keeping with the broad outline of the AHA/ASA Stroke System of Care Guideline and the goal of optimizing each patient's care, recommendations should recognize that individual agencies may, with Medical Director guidance, adjust protocols to accommodate these considerations accordingly.

Recommendations should not:

1. Have the effect of driving all or a very large number of stroke patients to CSCs, overburdening them and having a major negative impact on PSCs.
2. Be driven by protecting or promoting the business interests of one hospital/health system over others.

Detailed Recommendations:

1. Measurement:
 - a. Data on patients transferred, effect on time to treatment, and effects on outcome should be collected prospectively (NJ Acute Stroke Registry) and reported quarterly.
 - b. Data collection must be tied to final diagnosis and outcome, which are only readily available at the CSC/TSC, not by EMS; hence these centers should be the sites of data collection.
 - c. EMS records all contain data on transit time, reasons for choice of hospital destination, and RACE score but these are not typically in discrete fields.
 - i. Get With the Guidelines (GWTG; the tool used by most hospitals to collect stroke data) currently contains a pre-hospital layer where all needed data elements can be recorded from EMS run sheets, including how destination decisions were made. Given the wide range of software currently used by EMS, this data transfer must be done manually. The stroke coordinators in the group felt they review these data now and this would likely not be unduly burdensome.
 - ii. To be consistent with the Stroke Act's HIPAA-related limitations, and to couple pre-hospital data with final diagnosis and outcome, patient level data would need to be aggregated at each receiving CSC/TSC, with hospital-specific aggregate data then shared with NJDOH. PSCs would not need to collect these particular data although other PSC-specific data, including volume, would continue to be collected.
2. Primary Stroke Center bypass: This is now a nationally accepted practice and is already being done by the state's biggest health systems. There was universal agreement that this practice should be recommended statewide.
3. Thrombectomy Capable Center (TSC) bypass:

Arguments for bypass:

- a) The original intent of TSCs was for these to provide higher level care in areas without CSCs. Of the five centers certified in NJ, two are normally 30+ minutes from the nearest CSC, so they could fill a gap. The other three are much closer to existing CSCs.
- b) The TSC designation is intended to recognize expertise with LVO strokes. Ongoing data collection from RWJBHS and HMHS, literature data and epidemiologic expectations, indicate that about one-third of patients with a +LVO screen (RACE score 5 or greater) will actually have an ICH. The AHA/ASA model envisions TSCs transferring patients with subarachnoid

hemorrhages (SAH) and ICHs to CSCs. Importantly, TSC certification does not require TSCs to demonstrate experience or expertise with ICHs.

- c) When patients require transfer (e.g. ICH, SAH), typical door-in-door-out times exceed two hours – less than ideal for unstable patients with an acute intracerebral bleed.
- d) Statewide, the number of patients requiring LVO procedures is already at a level where some CSCs have difficulty maintaining sufficient volume to maintain expertise and certification. Diversion to TSCs will further lower the numbers at each center, lessening their teams' skills.

Arguments against/Risks of TSC bypass:

- a) Five hospitals (and potentially others) have invested resources and developed teams to provide TSC level care. Having patients who are potential thrombectomy candidates brought there would provide more options around the state and might shorten transit times for a small number of patients. Notably, some regions, including New York City, have opted to consider TSCs and CSCs as equivalent for purposes of initial transport and bypass.
- b) In some circumstances, other than those required by minimizing transport time, diversion of patients to TSCs may be necessary (e.g. when ER burden at the CSCs is overwhelming). Maintaining the skillset at these TSCs would be beneficial and requires sufficient volume.
- c) New Jersey's traffic patterns are often problematic, so expected transport times can vary widely.
- d) Bypassing TSCs will, to a limited extent, negatively impact volume at two prominent NJ hospitals.

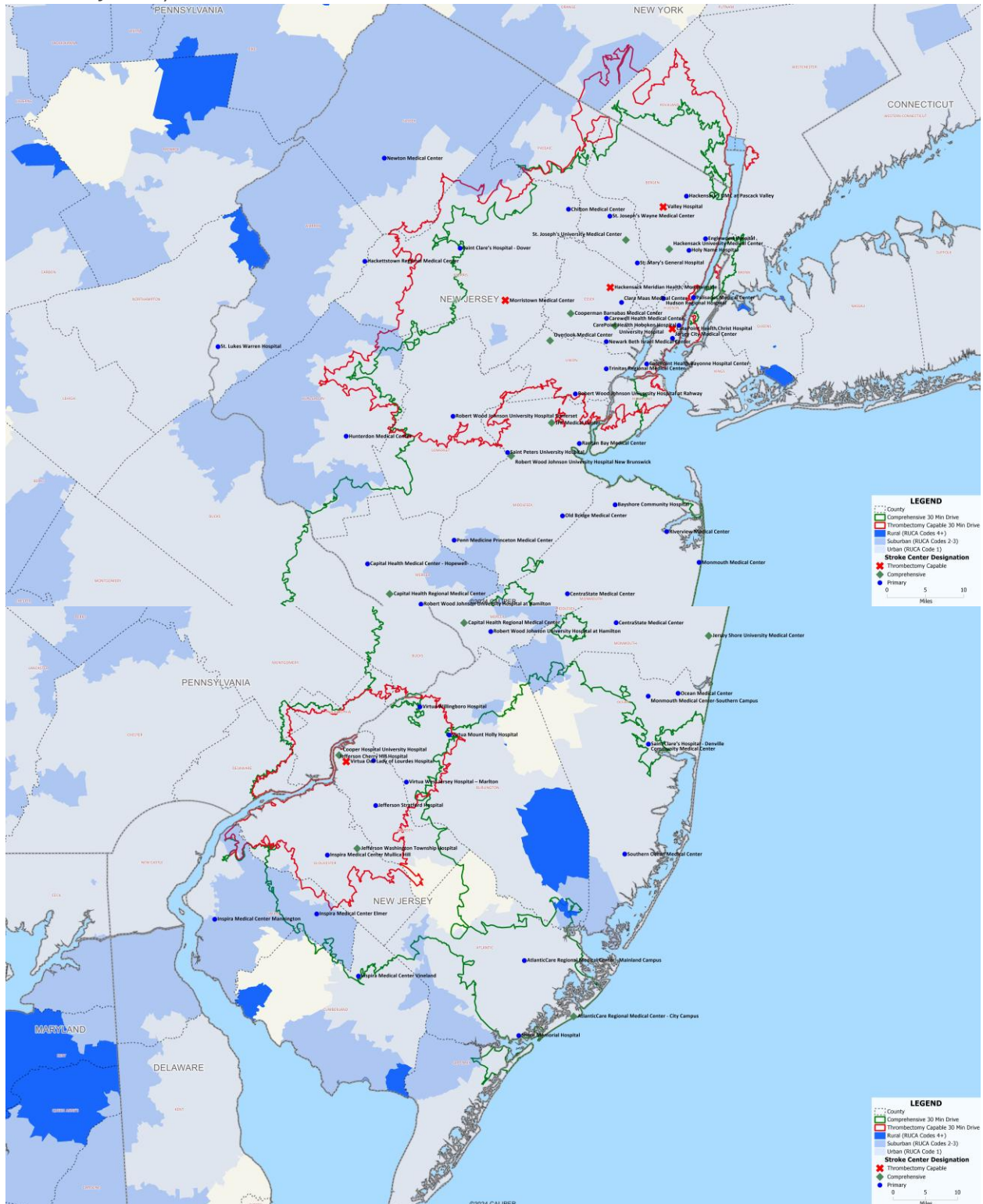
Having carefully considered these different factors, the members of SCAP unanimously recommend:

1. RACE score: Continue to advance adoption by pre-hospital providers for identification of patients:
 - a. With LVO strokes, for diversion to a CSC, or, when appropriate, a TSC.
 - b. At low risk of LVO stroke to be taken to an appropriate, nearby, certified stroke center with any level of certification.
 - c. Develop and implement tools to measure efficacy of the RACE score at identifying these patients, the numbers of patients bypassing other centers to obtain care and the transit times for patients to reach these centers.
 - d. Monitor the impact annually to determine the extent to which the redistribution of these patients impacts timely care, outcomes, resource requirements and utilization at individual centers.
2. For patients with a RACE score 5 or greater, last known well 24 hours or less, taking into consideration local agency protocols, anticipated traffic conditions, emergency department divert status, etc., advise EMS:
 - ***If*** total transport time from scene to CSC 30 minutes or less:
 - Go directly to CSC

- **If no CSC** within 30-minute transport time AND total transport time from scene to **TSC** 30 minutes or less:
 - Go directly to TSC,
- **If no TSC or CSC within 30-minute total travel time:**
 - Go to an accessible, appropriate, designated stroke center, regardless of level, as quickly as feasible.
- If no designated stroke center accessible within 30 minutes, consider air transport.

Appendix A

30-minute average transport times to NJ CSCs and TSCs, including rural-urban commuting area (RUCA) designations (courtesy of Office of Planning & System Development, Atlantic Health System)



Appendix B

AHA/ASA Proposed triage algorithm (from *Recommendations for Regional Stroke Destination Plans in Rural, Suburban and Urban Communities* (Stroke 2021; 52:e133-e152).

Urban: suspected LVO should be triaged directly to a CSC

if total transport time from scene to CSC does not exceed 30 minutes.

If no CSC w/in 30-minute transport time, EMS should go directly **to a TSC if total transport time from scene to a TSC does not exceed 30 minutes.**

If no TSC or CSC within a 30-minute total travel time, EMS should go to the nearest PSC or ASRH.