Proposed Revisions
Tiered Performance Framework

DIDO for EVT Evaluation ≤ 90 minutes AHASTR367 Goal 50%		AHASTR
Door to Transfer Requests	**30 minutes or less (call as soon as possible)** *Consider early activation if auto-accept with receiving facility is not in place	**376 Group 6: 26-30 min**
Door to ground or air medical Transport Requests	**30 minutes or less (call as soon as possible)**	**377 Group 6: 26-30 min**
Transfer Request to Accepted	**10 minutes or less**	**390**
Transfer Request to Transport Arrival	**30 minutes by air or ground urban/suburban and 45 minutes rural**	**380 Group 6: 26-30 min Group 9: 41-45 min**
Transport Arrival to Door Out	**Median 15 minutes or less**	**173**

Proposed Revisions
Tiered Performance Framework

DIDO for EVT Evaluation ≤ 120 minutes AHASTR368 **Goal 80%**		AHASTR
Door to Transfer Requests	**75 minutes or less (call as soon as possible)** *Consider early activation if auto-accept with receiving facility is not in place	**388**
Door to ground or air medical Transport Requests	**75 minutes or less (call as soon as possible)**	**389**
Transfer Request to Accepted	**10 minutes or less**	**390**
Transfer Request to Transport Arrival	**60 minutes or less**	**391**
Transport Arrival to Door Out	**Median 15 minutes or less**	**173**

DIDO Best Practice Recommendation

DIDO Process Enhancement

Goal: Establish protocols, workflows, and performance goals to achieve **Door-In Door-Out (DIDO) ≤ 90 minutes** for acute stroke patients with emergent large-vessel occlusion (LVO) eligible for EVT or requiring an emergent intervention, focusing on improving workflow efficiency and time awareness**.**

1. **Data Capture, Feedback, and Transparency**
    - **Performance Improvement (PI) Measures & Targets**: Define stroke performance goals (**Fig 1**) with continuous real-time tracking (e.g., median door to teleneurology contact 6 minutes for patients arriving by private vehicle and 2 minutes by ambulance).
    - **Data Infrastructure:** Maintain an internal database to monitor performance and drive process changes.
        - Benchmark via external registry participation (e.g., Get-With-the-Guidelines or Regional Advisory Council (RAC) Data Collaborative).
    - **Automated Timestamps (EMR or Stand-Alone):** Use standardized templates/forms/smart phrases/electronic medical record (EMR)-based tools (e.g., Stroke Narrator) to capture key workflow time points (e.g., arrival, decision, acceptance, departure) with clear definitions and ownership. Whenever possible, embed templates within the EMR to allow auto-population from system-generated timestamps (e.g., orders, imaging, or transport events). In settings where full EMR integration is not feasible, use a standardized paper form, a fillable PDF, or a shared digital worksheet, with subsequent manual entry or upload to a centralized database.
        - Clearly define ownership for each time point (e.g., EMS, triage nurse, stroke coordinator), specify the accepted time source (system time preferred over wall clock), and maintain a simple audit trail to ensure transparency and consistency.
        - Perform regular (e.g., monthly) review of data completeness and accuracy, provide feedback to frontline teams on missing or inconsistent entries, and iteratively refine the documentation tools and workflows.
        - Consider leveraging an EMR-based Stroke Narrator or similar module to streamline one-stop documentation of all critical time points. Develop prebuilt favorites and workflows to enable rapid, consistent RN documentation while minimizing duplicate data entry.
    - **Debrief:** Conduct real-time internal debriefs after each thrombectomy transfer and/or thrombolytic administration to identify what worked and what to fix (**Fig 2**). While not always feasible, the goal should be 24 to 72 hours for the debrief.
        - Include all available stroke team members (ED, neurology, nursing, radiology, EMS when applicable) and foster a non-punitive,

psychologically safe environment that encourages open and constructive dialogue.
    - Use a brief, structured format (e.g., “what went well, what could be improved, action items”) to ensure consistency and efficiency.
    - Capture key takeaways and assign follow-up actions when needed to close the loop.
- **Performance Transparency:** Display real-time stroke performance metrics (e.g., door-to-computed tomography (CT), door-to-needle [DTN]), DIDO median times) using dashboards, whiteboards, or standardized reports that are accessible to frontline staff.
    - Use color-coded benchmarks (e.g., green, yellow, red) aligned with institutional or national goals to quickly identify performance gaps.
    - Share both individual case performance and aggregate trends to reinforce accountability and awareness.
- **Celebrate Wins:** Recognize high performance and positive outcomes.
    - Highlight cases with excellent workflow or clinical outcomes in team communications, meetings, or newsletters.
    - Acknowledge contributions from all team members, including EMS and ancillary staff, to reinforce a culture of excellence and teamwork.
    - Use recognition as a tool to promote morale, engagement, and adherence to best practices.
- **Feedback Loop**: Establish a structured real-time feedback process (**Fig 2**) across the care continuum (e.g., EMS, transferring facility, medical transport, receiving facility).
    - Require real-time feedback from receiving facilities within 7–14 days for emergent transfers, particularly when delays, workflow deviations, or repeat imaging occur.
    - Implement integrated standardized report-outs that include key time metrics (DTN, DIDO, door-to-device [DTD], groin puncture/preparation) and role-specific goals.
    - Conduct regular (e.g., quarterly) integrated debriefs between transferring and receiving facilities to identify system-level improvements and ensure alignment on expectations and protocols.
    - Engage EMS agencies in regular feedback cycles for both interfacility transfers and prehospital activations, providing case-based feedback tied to defined performance goals and case outcomes.
    - Hold monthly multidisciplinary meetings to review performance data, discuss trends, and prioritize targeted quality improvement initiatives.
    - Ensure all feedback is actionable, timely, and tracked over time to support continuous quality improvement and system optimization.

2. Team-Based Approach

- **Build the Stroke Team:** Establish a formal, multidisciplinary stroke team with clearly identified members across the entire continuum of care. Possible members include emergency department (ED) physicians, ED RNs, triage RNs, ED clerks, stroke RNs, charge RNs, assistant nurse managers (ANMs), teleneurologists, radiologists, CT technologists, pharmacists, transport staff, transfer center personnel, EMS, and representatives from receiving centers.
    - Define expectations for availability and response times for each role.
    - Promote a shared mental model of stroke care where all team members understand the urgency, workflow, and their contribution to time-sensitive decision-making.
    - Reinforce a culture of teamwork, accountability, and mutual support across disciplines and sites of care.
- **Clear Roles:** Assign tasks with clearly defined roles, responsibilities, and escalation pathways to minimize delays and confusion.
    - Standardize team member positioning (e.g., who is at bedside, CT, medication preparation) and workflow during a stroke code, and use closed-loop communication to confirm task completion.
        - Consider scripted roles with standardized language and approved abbreviations to improve clarity and reduce variability during high-stress situations.
    - Clearly delineate responsibilities for key actions (e.g., teleneurologist initiates transfer request directly to neurointerventional team or receiving stroke center; ANM coordinates EMS activation and transfer logistics).
    - Define who accompanies the patient to imaging and expected arrival locations for each team member (e.g., pharmacist prepares and delivers thrombolytic at CT; stroke RN remains with the patient throughout).
    - Develop a time-specific sequence of actions to ensure consistency and completeness of the workflow (**Fig 3**)
    - Consider additional role-specific checklists that outline key tasks.
    - Establish clear escalation protocols if delays occur (e.g., backup personnel, direct attending notification).
- **Communication Platforms:** Implement a HIPAA-compliant real-time communication system to support rapid coordination across the stroke team. Platforms such as Microsoft Teams, secure mobile applications (e.g., Pulsara, Rapid, Viz, Aidoc), or EMR-integrated messaging (EPIC secure chat) can facilitate efficient information sharing.
    - Utilize systems that support role-based alerts, group notifications, and escalation pathways to ensure the right team members are notified at the right time.
    - Enable closed-loop communication and real-time updates on key milestones (e.g., imaging complete, thrombolytic given, transfer accepted).

    - Consider options with a documented audit trail of communication to support quality improvement and performance review.
- **Stroke Quarterback:** Designate a dedicated stroke RN to serve as the "stroke quarterback," remaining with the patient throughout the ED course to coordinate care and track progress.
    - The stroke RN is responsible for real-time tracking of key milestones (arrival, imaging, decision, treatment) and identifying and addressing delays.
    - Serves as the central point of communication between team members, ensuring alignment and task completion.
    - Responsible for patient care coordination and accurate documentation of timelines and interventions.
    - Proactively ensures team readiness, including notifying the pharmacy to prepare thrombolytic agents, coordinating CT scanner readiness, and confirming the availability of necessary personnel and equipment.
    - Escalates delays or barriers promptly to maintain workflow efficiency.

3. **Optimize Workflow**
    - **Prearrival EMS Notification & Direct-to-CT:** Promote consistent EMS prenotification for all suspected stroke patients to allow early team activation and resource mobilization. Develop criteria-driven protocols that route eligible patients directly to CT upon arrival, bypassing traditional triage and rooming processes when safe and appropriate. Registration, safety screening, and clinical assessment should occur in parallel to minimize delays.
        - When feasible, pre-register the patient or locate an existing medical record prior to arrival to avoid delays at the front end.
        - Include next-of-kin or a witness in EMS prenotification whenever possible to obtain critical history (last known well, medications, comorbidities).
        - Initiate early contact with next-of-kin or witnesses prior to arrival to begin gathering time-sensitive information and expedite decision-making.
        - Establish clear inclusion and exclusion criteria for direct-to-CT workflows to ensure patient safety (e.g., airway stability, hemodynamic status).
    - **Stroke Area:** Designate a dedicated stroke evaluation area near the ambulance bay and CT scanner to streamline patient flow and reduce transition times.
        - Define and standardize required equipment and supplies that should be available and stocked in the designated area based on patient volume and site capability (e.g., stretcher, monitoring equipment, teleneurology setup, stroke kits, IV supplies, workflow checklists).

    - Whenever possible, the stroke team and teleneurology provider should meet the patient in this area and initiate evaluation immediately upon arrival.
    - Avoid unnecessary rooming; unless the stroke code is canceled, patients should move directly from the stroke area to imaging.
    - Ensure this area supports rapid turnover and is consistently maintained in a state of readiness.
- **Standardized Clinical Pathways:** Implement clearly defined, evidence-based pathways to reduce variability and support rapid decision-making.
    - **Stroke Protocols:** Develop clearly defined stroke protocols that outline the end-to-end workflow for stroke evaluation, including screening/identification of LVO, eligibility criteria for thrombolysis, criteria for transfer, and management of anticoagulant-associated intracerebral hemorrhage (**Fig 4**).
    - **Standardized Documentation:** Utilize EMR tools such as Stroke Narrator with customized “favorites” to streamline documentation, prompt completion of required fields, and reduce variability across providers.
    - **Checklists:** Use structured checklists to ensure reliability and completeness of key steps during stroke activation.
    - **In-Network Alignment:** Standardize protocols and workflows across all affiliated facilities to ensure consistent care delivery, especially for interfacility transfers.
- **Pit Stop Approach (TEAMSTEPPS-Driven Workflow):** Adopt a streamlined “Pit Stop” model grounded in TEAMSTEPPS principles to enhance coordination, communication, and efficiency during the initial evaluation of suspected stroke patients.
    - **Immediate Access to Providers:** Ensure rapid engagement of ED providers and teleneurology at or before patient arrival to facilitate early decision-making.
    - **Early Teleneurology Assessment:** When feasible, perform teleneurology evaluation prior to CT to accelerate clinical assessment, initiate treatment planning, and activate downstream resources.
    - **Coordinated Team Roles:** Clearly define and rehearse responsibilities for each team member (e.g., history acquisition, IV access, monitoring, documentation) to minimize duplication and delays.
    - **Closed-Loop Communication:** Use structured communication tools (e.g., SBAR) to ensure accurate and efficient information exchange among EMS, ED staff, radiology, and stroke team members.
    - **Parallel Processing:** Maximize efficiency by performing tasks simultaneously rather than sequentially (e.g., pharmacist prepares thrombolytic while imaging is underway; RN establishes IV access

while history is obtained; CT angiography [CTA] head and neck completed while waiting on noncontrast CT [NCCT] interpretation).
    - **Continuous Flow:** Maintain forward momentum by minimizing pauses between steps and proactively addressing barriers as they arise.

4. **Appropriate Imaging**
    - **Advanced Notification:** Include the CT technologist and the neuroradiology or radiology team in the stroke alert to ensure scanner readiness, appropriate protocol selection, and rapid image acquisition and interpretation.
    - **Screen for LVO:** Promote early stroke and stroke-severity screening (e.g., LVO scales) to identify patients at high risk for LVO.
    - **Parallel Workflow:** While awaiting NCCT interpretation, obtain vascular imaging (CTA or MRA) and, when indicated, perfusion (CTP or MRP) imaging paired with the initial noncontrast CT (NCCT) or MRI. Embedding automatic CT/CTA/CTP pairing into triage protocols and EHR stroke alerts to ensure consistency and rapid execution.
    - **Standardize:** Standardize imaging protocols and order sets to minimize variability and reduce decision delays at the bedside.
    - **Thrombolysis Decisions:** When eligible, make thrombolysis decisions and administer treatment directly on the imaging table to avoid unnecessary transport delays.
    - **Avoid IVT Delays:** Do not allow advanced imaging beyond NCCT to delay IV thrombolysis (IVT) in eligible patients (within 4 hours from last known well [LKW]); prioritize treatment, with additional imaging obtained only when it will not impact time-sensitive care. A parallel workflow and automatic embedded CT/CTA pairing should mitigate this risk.
    - **Avoid EVT Delays:** Do not allow advanced imaging, including MRI for late-window IVT evaluation, to delay transfer in patients with LVO who are eligible for thrombectomy (EVT); timely transfer for endovascular therapy should take priority, as bridging IVT has not shown benefit in patients who receive EVT.
    - **Image Sharing:** Ensure rapid image transfer and accessibility for remote review by teleneurology and receiving centers.
5. **AI-Enabled Imaging & Triage:**
    - Deploy artificial intelligence (AI)-enabled imaging tools and secure mobile applications to support rapid CT interpretation and streamline communication.
    - Utilize AI platforms to assist with early detection of LVO, intracranial hemorrhage, intracranial aneurysm detection, and perfusion abnormalities, enabling faster clinical decision-making.
    - Configure systems to generate automatic alerts to the stroke team and receiving facilities when imaging suggests LVO or other critical findings.
    - Integrate AI outputs into existing workflows to complement, not replace, clinical judgment and radiology interpretation.

- Use mobile platforms to facilitate real-time image sharing, communication, and coordination across sites of care.

6. **Telestroke or Neurohospitalist Coverage:**
   - **24/7 Neurology Coverage:** Ensure continuous, reliable access to neurologic expertise through telestroke or in-house neurohospitalist coverage.
     - Provide 24/7 timely consultation to support rapid evaluation, treatment decisions, and escalation of care.
     - Establish clear expectations for response times and communication pathways between ED providers and consulting neurologists.
   - **Expanded Role:** The consulting neurologist should coordinate closely with ED staff and neurointerventional teams, initiate transfer discussions when appropriate, and facilitate acceptance at Level 1 or Level 2 stroke centers.
   - Standardize documentation and communication processes to ensure continuity of care across transitions.
7. **Streamline Decision-Making at the Bedside**
   - Reduce delays by empowering frontline providers and simplifying decision pathways.
   - **Emergent Stroke Transfer Criteria:** Clearly define criteria for emergent stroke transfers, including suspected or confirmed LVO eligible for EVT and acute hemorrhagic stroke requiring emergent intervention.
   - **Rapid Activation Protocols:** Empower ED physicians, telestroke providers, stroke leaders, and charge nurses to initiate the transfer process immediately once criteria are met, without waiting for multiple layers of approval.
   - **Streamline:** Eliminate non-value-added steps and redundant consultations that delay care.
   - **Workflow Algorithm:** Standardize decision algorithms **(Fig 5)** and escalation pathways to ensure consistent and timely action.
   - Encourage early parallel communication with receiving centers to reduce time to acceptance and transfer.
8. **Thrombolytic agent**
   - **Medication Preparation and Availability:** Some institutions pre-mix thrombolytic agents to streamline workflow and reduce DTN and DIDO times. This approach can minimize delays related to medication preparation, particularly in time-sensitive scenarios. However, reimbursement for unused medication varies and is determined on a case-by-case basis by the manufacturer and payer; reimbursement is not guaranteed. Institutions should review current manufacturer guidance, pharmacy policies, and cost considerations when developing local protocols. Clear processes for medication storage, labeling, expiration tracking, and replacement should be established in collaboration with the pharmacy.
   - **Consider Tenecteplase (TNK) to Shorten DIDO:** Tenecteplase offers workflow advantages due to its single IV bolus administration, eliminating the need for continuous infusion.

    - **Streamlined Workflow:** A single bolus simplifies bedside preparation and administration, reducing treatment complexity and enabling faster transition to transfer when appropriate.
    - **Facilitates Rapid Transfer:** Because no infusion is required, patients can be transferred immediately after administration without waiting for infusion setup or completion.
    - **Simplified Transport:** Absence of an infusion pump reduces equipment needs during transport, allowing standard ALS interfacility transfer and decreasing the risk of infusion-related errors or interruptions.
    - **Reduced Handoff Complexity:** Eliminates the need for pump management and dose verification during transitions of care, improving safety and efficiency.

9. **Coordination with EMS & Receiving Facilities**
    - Activation of the receiving facility and transport resources should occur **in parallel with clinical evaluation**, rather than sequentially after confirmation of LVO.
    - **Standardized Stroke Language:** Establish clear, agreed-upon terminology to communicate stroke severity and transfer urgency to EMS and receiving facilities (e.g., suspected LVO, hemorrhagic stroke, emergent transfer). Standardized language reduces ambiguity, improves prioritization, and facilitates faster decision-making across teams (**Fig 6**).
    - **Direct Communication**: Implement dedicated communication pathways, such as direct phone lines or secure telehealth/video platforms, to enable immediate physician-to-physician handoff. This allows rapid sharing of clinical status, imaging findings, and treatment decisions, minimizing delays associated with indirect communication or multiple intermediaries.
    - **911 Activation:** Where permitted by local EMS systems and Regional Advisory Council (RAC) protocols, facilities may utilize direct EMS activation (including 911 or dedicated interfacility dispatch pathways) to reduce delays. This approach should be aligned with regional policies, EMS jurisdiction, and pre-established agreements. A single-call process reduces handoffs, simplifies communication, and accelerates dispatch.
    - When appropriate, consider allowing the teleneurology provider to initiate ambulance activation by instructing the designated staff member responsible for transport coordination to improve efficiency and reduce transfer delays.
    - **EMS Pre-Notification**: Engage EMS early, as soon as emergent transfer is anticipated, even if the decision is not yet finalized. Early notification allows EMS to mobilize resources in parallel with clinical decision-making, reducing overall transfer time.
        - Provide key clinical details (e.g., suspected LVO, hemodynamic status, airway needs) to support appropriate resource allocation.
        - **Goal: door-to-transport request (ground or air) ≤30 minutes**
    - **Receiving Facility Notification:** Engage the receiving facility early, as soon as an emergent transfer is anticipated, even if the decision is not yet finalized. Early notification allows parallel mobilization of the receiving stroke

team (neurointerventionalist, anesthesia, IR suite), preliminary imaging review, and early decision-making regarding acceptance**,** thereby minimizing DIDO delays and shortening time to reperfusion.
    - Consider a HIPAA-compliant, unified communication system that supports real-time team messaging, rapid image sharing (with PACS integration), and direct clinician-to-clinician communication.
    - Incorporate role-based alerts and escalation pathways to ensure timely engagement of appropriate personnel.
    - Maintain a documented audit trail to support quality improvement and performance tracking.
    - **Goal: door-to-transfer request ≤30 minutes**
- **Pre-Negotiated Agreements**: Develop regional memorandums of understanding (MOUs) with receiving centers to enable protocolized or auto-acceptance pathways for emergent stroke transfers, minimizing delays from sequential acceptance negotiations when capacity allows.
    - Whenever feasible, regions should transition from case-by-case acceptance models to **standardized or auto-accept pathways** to reduce time to acceptance and improve system efficiency.
    - Define clear criteria for automatic or expedited acceptance.
    - Align expectations for communication, documentation, and transfer workflows across facilities.
    - **Goal: transfer request to accept ≤10 minutes**

10. Ambulance-Based Teleneurology Activation:

- In regions with ambulance-based teleneurology (ABT) in the prehospital setting, it enables real-time neurologist evaluation in the field to accelerate downstream processes.
- **Early Hospital Activation:** When stroke is suspected, the teleneurologist can alert the receiving hospital to initiate stroke team activation, imaging readiness, and resource mobilization prior to arrival.
- **Prehospital Transfer Initiation:** For patients with suspected LVO, the teleneurologist can initiate the transfer process while the patient is en route to the initial hospital, including early notification of thrombectomy-capable centers and activation of transfer pathways. This is particularly impactful in rural settings with prolonged transport times, allowing parallel processing and reducing overall DIDO.
- **EMS Transport Optimization:** ABT can support EMS destination decisions and prioritize transport to the most appropriate stroke center based on severity and regional protocols.
- **Parallel Processing:** ABT can begin critical elements of history collection (e.g., last known well, anticoagulation status, next-of-kin contact) and clinical assessment during transport to streamline in-hospital workflow.
- **Prearrival Coordination:** ABT can enable continuous communication between EMS, teleneurology, and receiving teams to ensure readiness and minimize time to treatment upon arrival.

11. Prepare Patient for Transport

- **Optimize Readiness for Transfer:** Ensure all essential imaging, documentation, and clinical information are complete, accessible, and transmitted prior to the receiving facility prior to departure.
- **In Network Transfers:** Utilize a standardized SBAR-format smart phrase within the EMR for nurse-to-nurse handoff. This allows the receiving IR nurse to review critical clinical details directly in the chart, reducing reliance on synchronous phone communication and minimizing delays related to availability.
- **Prepare the Patient for EVT**: Assign a designated RN to complete a standardized transfer checklist to ensure consistency and avoid last-minute delays. Items to include:
    - Remove clothing and place the patient in a gown only to facilitate rapid procedural access upon arrival.
    - Consider groin site preparation (e.g., clippers are preferred over shaving) if it can be completed without delaying transfer.
    - Place a Foley catheter when clinically appropriate and if it does not delay transfer.
    - Ensure IV access is secure and functioning, and that required medications or infusions are appropriately managed for transport.
    - Confirm that all imaging and key documentation accompany the patient or are electronically available.
- **Accountability and Feedback:**
    - Transferring and receiving hospitals should document the completeness of transport preparation using standardized criteria.
    - Incorporate transport readiness metrics into interfacility performance reports and feedback loops to identify gaps and drive continuous improvement.

12. Medical Transport Arrival

- **Transfer Arrival Workflow:** Once the interfacility transport (IFT) team arrives, the ANM (or someone with the defined role) completes all required transfer documentation and assists with moving the patient to the transport gurney, ensuring continuity of monitoring and lines during the handoff.
- **Receiving Facility Notification:** The ANM (or someone with the defined role) promptly notifies the house supervisor or designated contact at the Level 1/2 stroke center that the patient is en route.
    - This communication should include key updates (e.g., clinical status, NIHSS at discharge, estimated time of arrival, any changes since initial acceptance) to support final preparation at the receiving site.
- **In Network Transfers:** the ED clerk or designated staff member should immediately finalize the patient encounter in the EMR at the time of transfer.
    - Enter the chart promptly and resolve all required fields or “hard stops” to avoid delays in closing the encounter.
    - Ensure documentation is complete, accurate, and accessible to the receiving team.

    - It is essential to remove the patient from the ED tracker as soon as they are en route, allowing the IR team to easily pull the patient into their system upon arrival.

13. **Targeted Education & Simulation**
    - **Embed an Urgency Culture in Training:** Reinforce the principle of "*time is brain*" through structured education, real-time huddles, and immediate feedback when performance targets are not met.
        - Incorporate clear time-based goals and escalation expectations into staff competencies.
    - **Eliminate "Non–Value" Delays:** Emphasize that patients requiring emergent intervention should **not** be delayed by non-essential steps (e.g., routine labs, non-urgent consults) when definitive care is not available locally.
        - Train teams to prioritize rapid transfer and critical decision-making over completion of low-impact tasks.
    - **Interdisciplinary Drills:** If the volume of EVT transfers is low, conduct regular (e.g., quarterly) mock stroke activations that include ED staff, EMS, and receiving centers. In higher-volume centers, consider conducting mock stroke codes at least once a year, if not more frequently. Mock stroke codes help the team more easily identify barriers, knowledge gaps in the protocol, and opportunities for improvement.
        - Focus on rehearsing rapid decision-making, role clarity, communication, and interfacility handoffs.
        - Include transfer-specific scenarios to identify system gaps and improve coordination across sites.
    - **Simulation Training:** Integrate simulation-based training into ongoing staff competency requirements.
        - Reinforce standardized workflows/protocols, closed-loop communication, and role execution in high-acuity scenarios.
        - Use simulation to practice uncommon but high-risk situations (e.g., delayed transfer, clinical deterioration during transport)
    - **Case-Based Learning:** Share anonymized cases with detailed timelines and outcomes to highlight delays, near-misses, and opportunities for improvement.
        - Provide clear, actionable takeaways and link lessons learned to protocol updates and performance goals.

Regional Coordination and System Collaboration

Goal: Align workflows between transferring and receiving stroke partners.

1. **Regional Capacity Dashboards**
    - Collaborate with Regional Advisory Councils (RACs) or equivalent entities to develop real-time dashboards (e.g., EMResource) displaying facility capacity and capabilities.

    - Include key elements such as bed availability, stroke facility level, diversion status, minimum age for care, bariatric consideration (e.g., weight capacity for scanners and angio table).
    - Ensure visibility across sending facilities, receiving centers, EMS, and transfer coordination teams to support rapid and informed destination selection.
    - Integrate dashboards into routine workflow and communication platforms to reduce reliance on manual status checks and phone calls.
2. **Designate Regional Partners with Auto-Acceptance**
    - Establish formal agreements with Level 1/2 stroke centers that support ***auto-acceptance*** of patients requiring emergent intervention (e.g., EVT-eligible LVO, select hemorrhagic cases), minimizing delays from repeated negotiations.
        - Define clear clinical criteria and escalation pathways to ensure appropriate use of auto-accept policies.
        - Streamline communication by enabling direct physician-to-physician or protocol-driven acceptance workflows.
        - Periodically review agreements to ensure alignment with capacity, performance metrics, and regional needs.
3. **Develop a "Plan B" Network**
    - Maintain an updated network of alternative receiving facilities to ensure continuity of care when preferred centers are on diversion or at capacity (**Fig 7**).
        - Include clear contact pathways, acceptance processes, and capability profiles for each backup site.
        - Ensure all stakeholders (ED, EMS, transfer centers, teleneurology) are familiar with fallback options and activation criteria.
        - Regularly validate and update the list to reflect real-time system changes and regional coverage gaps.
4. **Optimize Transport Mode Selection**
    - **Data-Driven Choice:** Select transport modality based on predefined distance bands and historical time-to-destination (TTD), refined with real-time factors such as traffic, crew availability, and weather conditions (e.g., ceilings, visibility, winds).
        - Customize thresholds to local geography and resources (e.g., ≤30–40 minutes ground; >40 minutes fastest available; >60 minutes consider air if feasible).
        - Prioritize any mode of transportation that achieves door-to-door TTD ≤60 minutes to an EVT-capable center.
    - **Operational Playbook:** Establish standardized, pre-defined workflows to ensure rapid and consistent transport activation.
        - Identify rendezvous points, helipad/landing zone procedures, and hospital-to-helipad transport routes.
        - Define role-based responsibilities for EMS, ED staff, and transport teams to minimize variability.

        - Maintain “ready-to-go” transport kits (e.g., IV access, infusions, airway equipment, imaging access, transfer documentation).
        - **Goal: wheels rolling ≤10 minutes after acceptance**
    - **Rapid MOT Communication:** Streamline communication to support timely and coordinated transport execution.
        - Use a single-call activation process when possible.
        - Implement closed-loop communication for ETA confirmation and bedside pickup readiness.
        - Utilize shared tracking tools to monitor transport status in real time.
        - Immediately communicate any change in transport mode (e.g., air to ground due to weather) to all stakeholders.
    - **Transport Redundancy:** Build redundancy into transport systems to avoid delays when preferred options are unavailable (**Fig 8**).
        - Pre-arrange agreements with multiple ground and air providers.
        - Allow simultaneous “soft holds” with no-penalty cancellation when appropriate.
        - Maintain updated coverage maps, weather minimum ceiling and visibility conditions, and typical response/flight times to support rapid decision-making when the first option is unavailable.
    - **Cost and Coverage Awareness:** Consider financial and operational factors when selecting transport mode.
        - Account for payer coverage, potential patient out-of-pocket costs, and availability of crews (e.g., night or rural coverage).
        - When transport times are equivalent, prioritize ground transport as a resource-efficient option.
    - **Quality Assurance & Refinement:**
        - Track actual TTD by transport mode, distance, time of day, and weather conditions.
        - Review data regularly (e.g., quarterly) to recalibrate thresholds and refine transport selection algorithms.
        - Use findings to update protocols and improve system performance over time.
5. **Centralized “Transport Call Tree.”**
    - **Standardized Contact Resource:** Provide ED and stroke team leads with a current, concise, one-page contact sheet that includes all regional ground and air transport partners (**Fig 8**).
        - Include key details such as capabilities (e.g., critical care transport, ventilator support), geographic coverage, and any limitations (e.g., weather or weight restrictions).
        - List direct activation numbers to bypass intermediaries and reduce delays.
    - **Accessibility and Integration:** Ensure the call tree is easily accessible at the point of care (e.g., posted in the ED, embedded in the EMR, available on mobile devices).
        - Integrate into stroke protocols and escalation pathways so it is routinely used during activations.

- **Maintenance and Reliability:** Assign responsibility for regular updates to ensure accuracy of contact information and capabilities.
    - Review and validate the call tree periodically (e.g., quarterly) or after any system changes.

6. **Early Transport Activation Protocol**
    - **Provisional Early Activation:** For patients with suspected LVO (e.g., positive prehospital LVO scale, NIHSS ≥6, or focal deficits such as gaze deviation with hemiparesis), pre-alert and provisionally dispatch transport prior to vascular imaging results to reduce DIDO and avoid delays once eligibility is confirmed.
        - Emphasize early activation of the **receiving facility and transport** as a parallel process aligned with ongoing evaluation rather than a sequential step.
    - **No-Fault Cancellation Agreements:** Establish prearranged agreements with ground and air transport partners that allow immediate, penalty-free cancellation if subsequent imaging or clinical reassessment determines transfer is not indicated.
        - Reinforce this as a standard practice to encourage early activation without hesitation.
    - **Defined Go/No-Go Criteria:** Develop clear clinical and operational criteria to guide activation decisions.
        - Include parameters such as hemodynamic stability, airway protection, IV access, and absence of contraindications to transfer.
        - Assign role-based responsibilities (e.g., who initiates the call to the receiving facility, who initiates the call for medical transport, who confirms transport and destination).
        - Define target timelines for each step to ensure consistency and accountability (**Fig 1**)
    - **Standardized Communication Workflow:** Utilize a one-call or recorded hotline system with closed-loop communication to streamline coordination.
        - Ensure shared ETA tracking and use of standardized terminology across EMS, ED, and receiving teams (**Fig 6**).
        - Transmit preliminary imaging results, clinical summary, and destination status early to support rapid acceptance and preparation.
    - **Escalation Pathways:** Define explicit triggers for escalation (e.g., >2 declines, >10 minutes without acceptance, or delays in transport availability).
        - Implement a stepwise escalation ladder (ED lead → stroke medical director → system transfer center → regional on-call).
        - Require warm handoffs between each level and assign time targets for escalation steps to prevent stagnation.
    - **Documentation and Performance Improvement:** Capture key elements in a brief standardized template (e.g., time of activation, criteria met, reason for continuation or cancellation).
        - Use this documentation for performance improvement review, feedback to teams, and alignment with transport partners.

    - Incorporate findings into regular quality reviews to refine activation thresholds and workflows.
7. **Transfer Coordination Platforms**
    - **Transport Coordination Platforms:** Consider utilizing centralized systems designed to rapidly identify and deploy available ground or air medical transport.
        - **Real-Time Transport Visibility:** Platforms (e.g., OLOS/Global Medical Response-type systems) provide immediate insight into available EMS, critical care transport, or air resources, reducing time spent on sequential calls.
        - **Rapid Dispatch:** Enable direct booking and activation of transport services to shorten the time from transfer decision to mobilization.
        - **Concurrent Activation:** Allow transport to be secured while clinical decision-making and receiving facility coordination are ongoing.
    - **Receiving Facility Coordination Platforms:** Leverage digital platforms that facilitate rapid identification and acceptance from appropriate higher-level stroke centers.
        - **Real-Time Capacity and Capability:** Display up-to-date information on stroke center resources (e.g., thrombectomy capability, bed availability) to support optimal destination selection.
        - **Streamlined Acceptance:** Enable rapid, often single-point-of-contact acceptance workflows to reduce delays associated with multiple calls and intermediaries.
        - **Integrated Image Sharing:** Support secure, real-time transfer of imaging for remote review by receiving teams, expediting decision-making, and avoiding repeat imaging.
    - **System Integration and Performance Optimization:**
        - **Parallel Workflow:** Coordinate simultaneous activation of transport and receiving facility acceptance to eliminate stepwise delays.
        - **Standardization:** Embed platform use into stroke protocols and escalation pathways to ensure consistent adoption across sites.
        - **Audit and Metrics:** Leverage platform-generated timestamps (e.g., request, acceptance, dispatch) to monitor performance and drive continuous quality improvement.
8. **Regional Communication Platform Integration**
    - **Shared Real-Time Communication Platform:** Ensure that transferring and receiving facilities utilize a common, secure communication tool to enable real-time coordination across the stroke care continuum (e.g., team messaging, alerts, image sharing).
        - Support rapid dissemination of clinical updates, imaging, and key timestamps to all stakeholders simultaneously.
        - Enhance situational awareness and reduce delays caused by fragmented or sequential communication.
    - **Integrated Imaging and Data Visibility:** Enable seamless image sharing (e.g., CTA/CTP) and remote review by receiving teams to expedite decision-making and avoid redundant imaging.

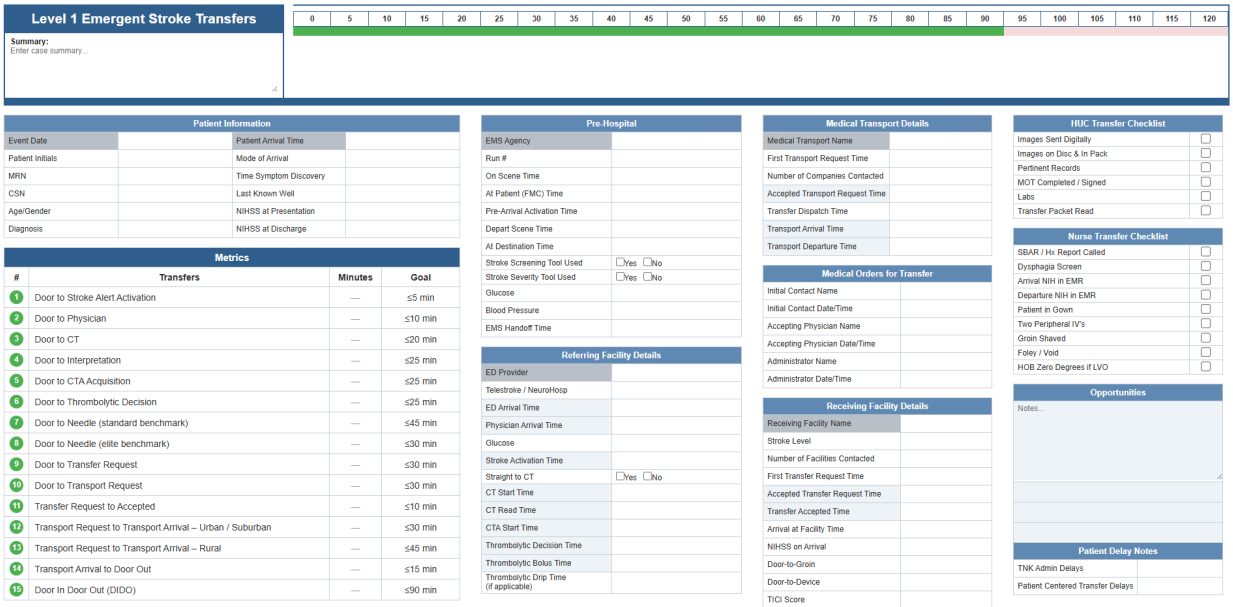
        - Provide timestamp visibility (e.g., activation, imaging, transfer request, dispatch) to support real-time tracking and performance monitoring.
    - **Standardization and Adoption:** Embed platform use into stroke protocols and workflows to ensure consistent utilization across teams and sites.
        - Incorporate role-based alerts and escalation pathways to ensure timely engagement of appropriate personnel.
        - Provide training and onboarding to maximize adoption and effective use
9. **Quarterly Regional Case Reviews**
    - **Multidisciplinary Performance Review:** Conduct regular (e.g., quarterly) joint case reviews involving ED leadership, receiving stroke centers, stroke coordinators, and interfacility transport (IFT) agencies.
        - Review key performance metrics (e.g., DIDO, transfer times, acceptance delays) and individual case timelines.
    - **Identify Gaps and Assign Accountability:** Analyze delays, workflow breakdowns, and near misses to identify root causes.
        - Assign specific action items with clear ownership and timelines for resolution.
    - **Continuous System Improvement:** Share lessons learned across all participating sites to promote system-wide improvement.
        - Track progress on previously identified issues and reassess performance trends over time.
        - Use findings to refine protocols, communication pathways, and regional coordination strategies.

Figure 1: GETAC Council Endorsed DIDO Performance Measures 50% at 90 minutes and 80% at 120 minutes

DIDO for EVT Evaluation ≤ 90 minutes AHASTR367 Goal 50%		AHASTR
Door to Transfer Requests	**30 minutes or less (call as soon as possible)** *Consider early activation if auto-accept with receiving facility is not in place	**376 Group 6: 26-30 min**
Door to ground or air medical **Transport Requests**	**30 minutes or less (call as soon as possible)**	**377 Group 6: 26-30 min**
Transfer Request to Accepted	**10 minutes or less**	**390**
Transfer Request to Transport Arrival	**30 minutes by air or ground urban/suburban and 45 minutes rural**	**380 Group 6: 26-30 min Group 9: 41-45 min**
Transport Arrival to Door Out	**Median 15 minutes or less**	**173**

DIDO for EVT Evaluation ≤ 120 minutes AHASTR368 Goal 80%		AHASTR
Door to Transfer Requests	**75 minutes or less (call as soon as possible)** *Consider early activation if auto-accept with receiving facility is not in place	**388**
Door to ground or air medical **Transport Requests**	**75 minutes or less (call as soon as possible)**	**389**
Transfer Request to Accepted	**10 minutes or less**	**390**
Transfer Request to Transport Arrival	**60 minutes or less**	**391**
Transport Arrival to Door Out	**Median 15 minutes or less**	**173**

Figure 2: Debrief Report Template Example



Level 1 Emergent Stroke Transfers

Summary:
Enter case summary...

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Patient Information

Event Date		Patient Arrival Time	
Patient Initials		Mode of Arrival	
MRN		Time Symptom Discovery	
CSN		Last Known Well	
Age/Gender		NIHSS at Presentation	
Diagnosis		NIHSS at Discharge	

Metrics

#	Transfers	Minutes	Goal
1	Door to Stroke Alert Activation	—	≤5 min
2	Door to Physician	—	≤10 min
3	Door to CT	—	≤20 min
4	Door to Interpretation	—	≤25 min
5	Door to CTA Acquisition	—	≤25 min
6	Door to Thrombolytic Decision	—	≤25 min
7	Door to Needle (standard benchmark)	—	≤45 min
8	Door to Needle (elite benchmark)	—	≤30 min
9	Door to Transfer Request	—	≤30 min
10	Door to Transport Request	—	≤30 min
11	Transfer Request to Accepted	—	≤10 min
12	Transport Request to Transport Arrival – Urban / Suburban	—	≤30 min
13	Transport Request to Transport Arrival – Rural	—	≤45 min
14	Transport Arrival to Door Out	—	≤15 min
15	Door In Door Out (DIDO)	—	≤90 min

Pre-Hospital

EMS Agency	
Run #	
On Scene Time	
At Patient (FMC) Time	
Pre-Arrival Activation Time	
Depart Scene Time	
At Destination Time	
Stroke Screening Tool Used	☐Yes ☐No
Stroke Severity Tool Used	☐Yes ☐No
Glucose	
Blood Pressure	
EMS Handoff Time	

Referring Facility Details

ED Provider	
Telestroke / NeuroHosp	
ED Arrival Time	
Physician Arrival Time	
Glucose	
Stroke Activation Time	
Straight to CT	☐Yes ☐No
CT Start Time	
CT Read Time	
CTA Start Time	
Thrombolytic Decision Time	
Thrombolytic Bolus Time	
Thrombolytic Drip Time (if applicable)	

Medical Transport Details

Medical Transport Name	
First Transport Request Time	
Number of Companies Contacted	
Accepted Transport Request Time	
Transfer Dispatch Time	
Transport Arrival Time	
Transport Departure Time	

Medical Orders for Transfer

Initial Contact Name	
Initial Contact Date/Time	
Accepting Physician Name	
Accepting Physician Date/Time	
Administrator Name	
Administrator Date/Time	

Receiving Facility Details

Receiving Facility Name	
Stroke Level	
Number of Facilities Contacted	
First Transfer Request Time	
Accepted Transfer Request Time	
Transfer Accepted Time	
Arrival at Facility Time	
NIHSS on Arrival	
Door-to-Groin	
Door-to-Device	
TICI Score	

HUC Transfer Checklist

Images Sent Digitally	☐
Images on Disc & In Pack	☐
Pertinent Records	☐
MOT Completed / Signed	☐
Labs	☐
Transfer Packet Read	☐

Nurse Transfer Checklist

SBAR / Hx Report Called	☐
Dysphagia Screen	☐
Arrival NIH in EMR	☐
Departure NIH in EMR	☐
Patient in Gown	☐
Two Peripheral IV's	☐
Groin Shaved	☐
Foley / Void	☐
HOB Zero Degrees if LVO	☐

Opportunities

Notes...

Patient Delay Notes

TNK Admin Delays	
Patient Centered Transfer Delays	

Figure 3: Recommended DIDO Time-Specific Sequence of Actions

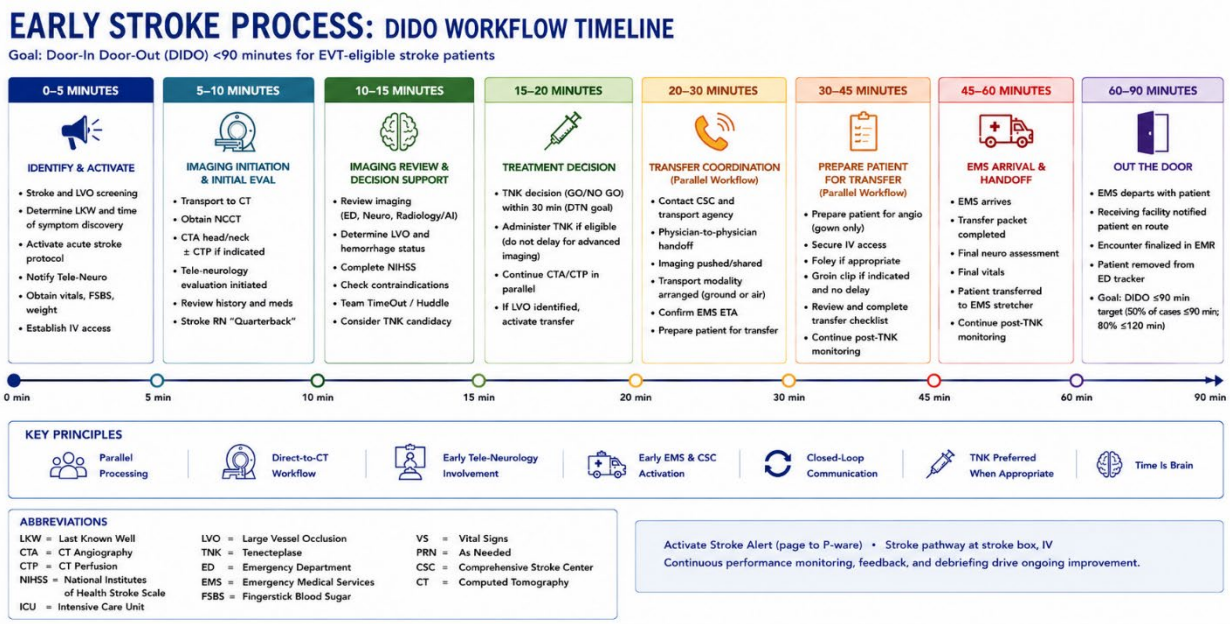


Figure 4: Stroke Protocol Example

Figure 5: Stroke Workflow Algorithm Example

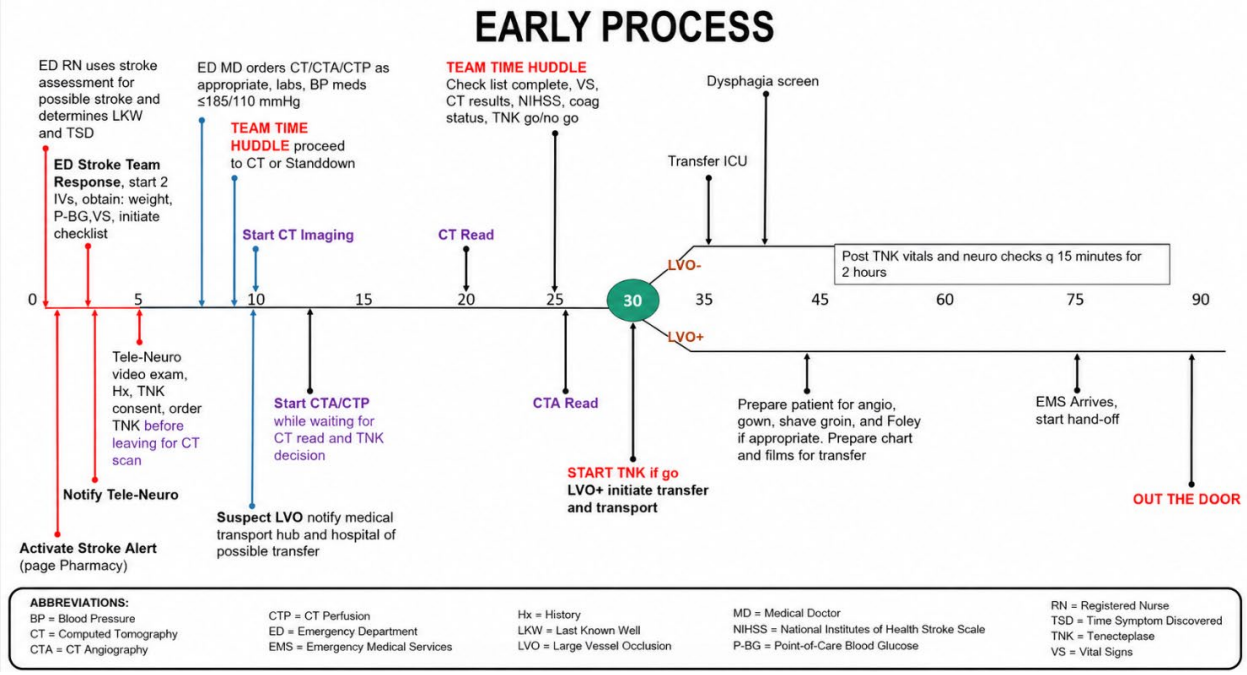


Figure 6: Interfacility Stroke Terminology Example

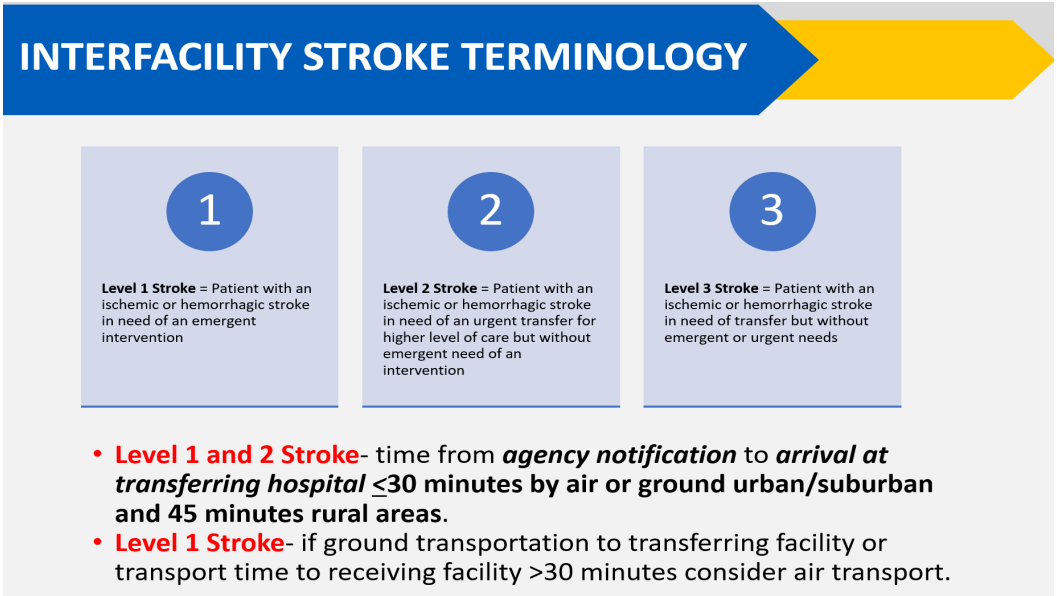


Figure 7: Emergent Stroke Transfer Acceptance Pathway Example

	CONTACT INFORMATION							Performance
Stroke Facility Tier	Facility Name	Auto-Accept Yes / No	Preferred Means of Contact (e.g., Transfer Hotline, App)	Primary Contact Phone Number	Backup Contact Phone Number	Median Minutes Transfer Request to Acceptance (Goal 10 minutes)	Rate of Acceptance for Emergent Transfers	
Level 1 CSC								
Level 1 CSC								
Level 1 CSC								
Level 1 CSC								
Level 1 CSC								
Level 2 TSC								
Level 2 TSC								
Level 2 TSC								
Level 2 TSC								
Level 3 PSC								
Level 3 PSC								

Figure 8: EMS Transfer Matrix Example

Gound EMS	Emergent Transfers	Routine Transfers	Ventilator	IV Pump	Critical Care Capability	Median minutes activation to arrival	911 Call Response Area
#1							
#2							
#3							
#4							
#5							
#6							
#7							
#8							
#9							
#10							
#11							

AIR EMS	Dispatch Phone Number	Location
#1		
#2		
#3		
#4		

EMS Acute Pediatric Stroke Routing Resource Document

INSERT WATERMARK - Resource Document

PEDIATRIC STROKE SCREEN POSITIVE

Sudden Onset/Wake from Sleep:
- Numbness
- Weakness
- Difficulty speaking or understanding
- Loss of vision/double vision
- Altered Mental Status
- Loss of balance or coordination
- New onset focal seizure
- Severe headache without cause

Pediatric Patient Stable

Yes

Management:
- Position head of bed 30 degrees
- Obtain vascular access if it does not delay transport

Patient Within 24 Hours of LKW

Yes

Age Appropriate for Adult Stroke Facility*

Yes

Stroke LVO Screen Positive

Yes

CSC ≤ 30 mins by Air or Ground EMS**

Yes

Transport to CSC

No

TSC ≤ 30 mins by Air or Ground**

Yes

Transport to TSC

No

Transport to Nearest Facility or per Regional Pediatric Plan

No

Age Appropriate for Adult Stroke Facility*

No

Stroke LVO Screen Positive

No

CSC ≤ 30 mins by Air or Ground EMS**

No

TSC ≤ 30 mins by Air or Ground**

No

★**Pediatric Stroke Destination ≤ 60 mins by Air or Ground Total Transport Time**

Yes

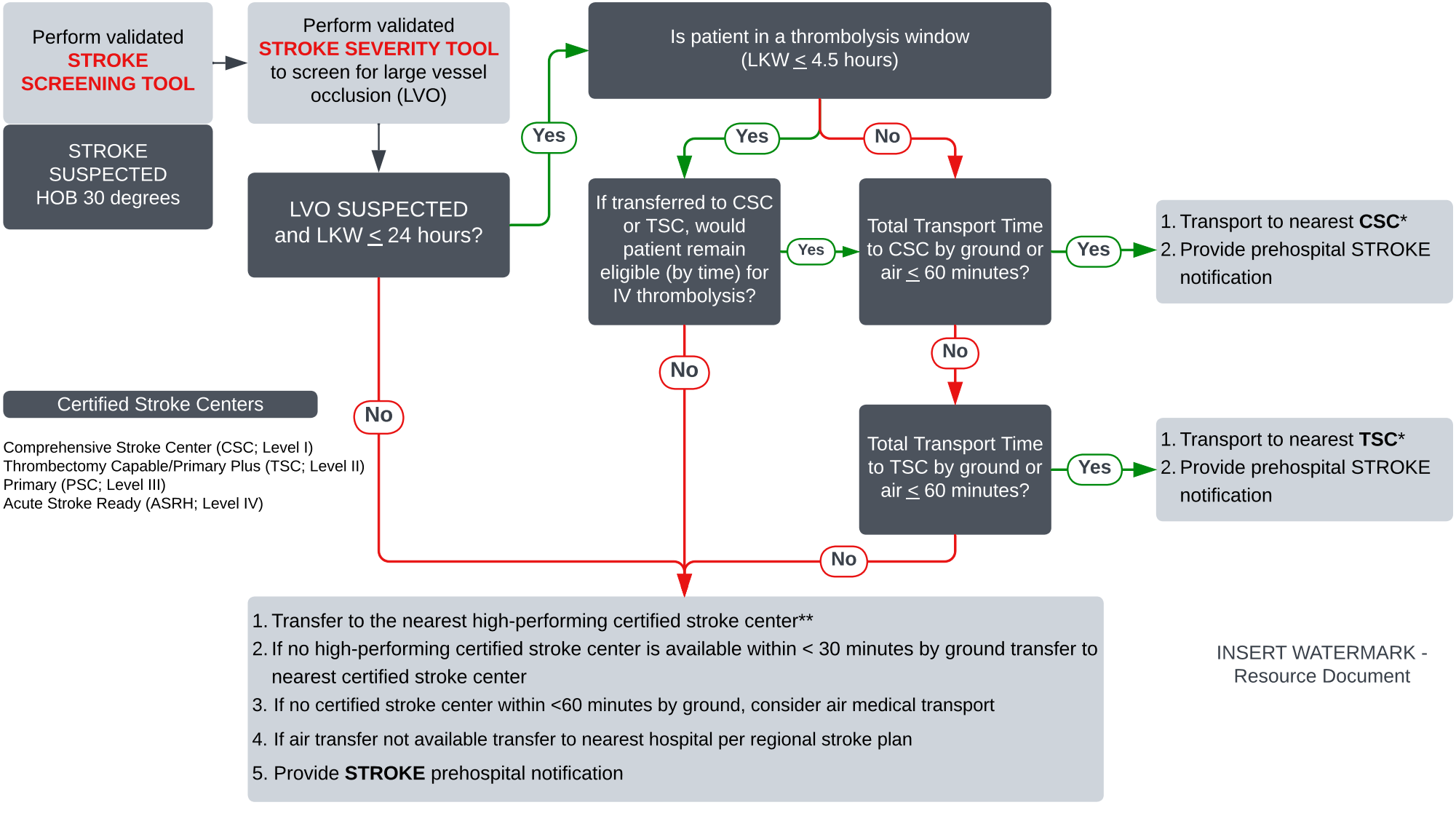
★**Transport Pediatric Stroke Destination**

Disclaimer: Regional Stroke protocols are developed and implemented based on local guidelines, medical directors' recommendations, and Regional Advisory Councils (RACs). Variations in protocols may exist between different regions. For the most accurate and applicable guidelines, please consult the specific protocols established by your local health authorities and medical professionals.

*Different adult stroke facilities will have different capabilities and willingness to evaluate and treat stroke patients under 18. RACs should outline the patients age appropriate for adult stroke facility admission based on regional facility resources and hospital policies; ** Within ≤ 30 minutes past the nearest Pediatric Stroke Destination and no more than 60 minutes total transport time by air or ground.

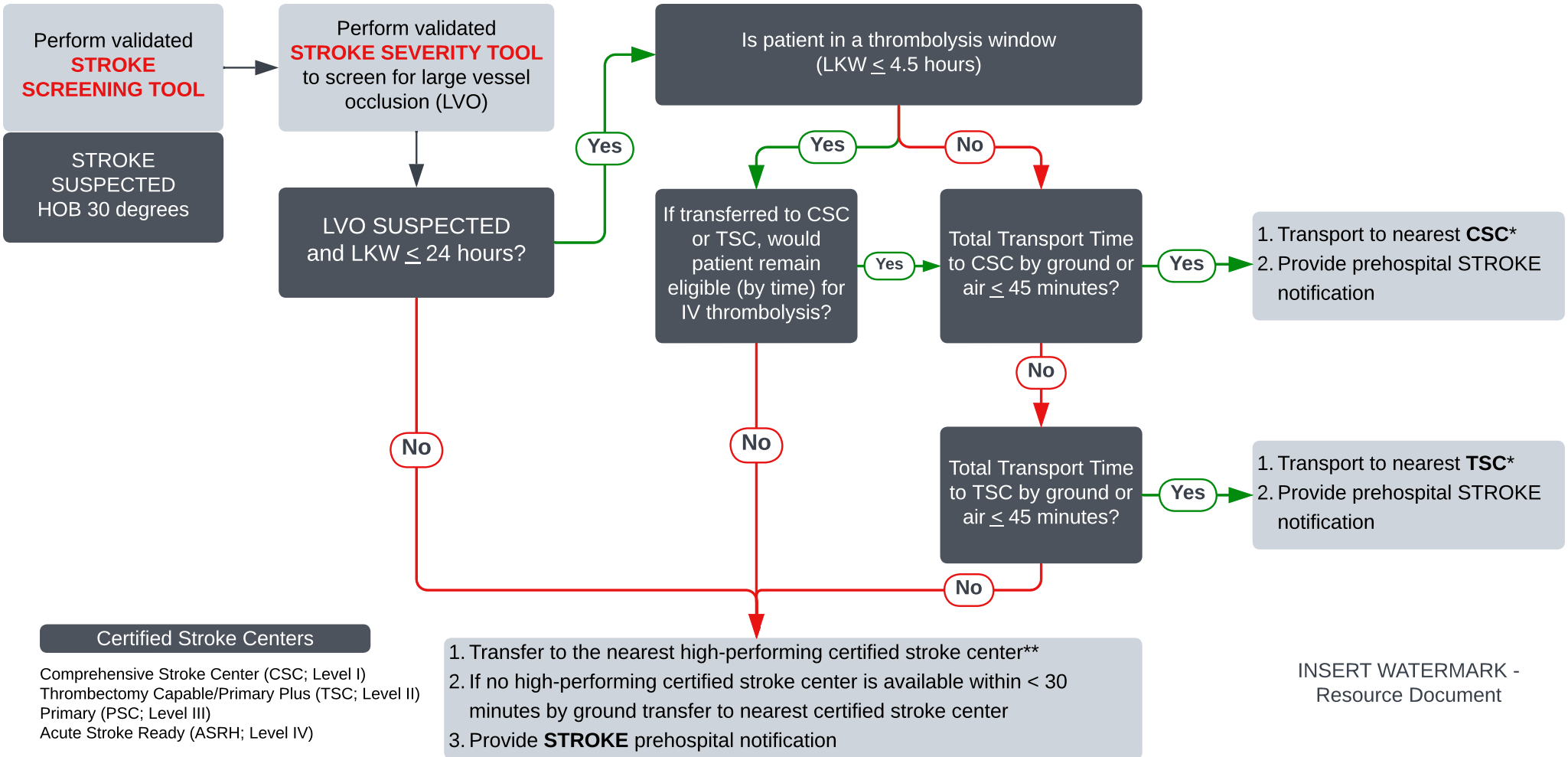
★There are **no** formal national or statewide guidelines, certifications, or recognition systems for 'Pediatric Stroke Destination'. EMS Medical Directors should determine which nearby facilities they will direct pediatric patients with suspected or confirmed stroke. **MOST** of these facilities will be tertiary care children's hospitals. CSC: Comprehensive Stroke Center; TSC: Thrombectomy Capable Stroke Center; LVO: large vessel occlusion; RAC: Regional Advisory Council

EMS Acute Stroke Routing Resource Document - Rural



LKW - Last known well; LVO - Large Vessel Occlusion; * If LVO suspected, consider air transport from scene response to CSC/TSC
** High-performing certified stroke centers demonstrate efficient thrombolysis delivery and interhospital transfer performance as defined by the region (e.g., median door-to-needle 33 minutes and door-in-door-out 78 minutes, consistent with RACECAT trial benchmarks).

EMS Acute Stroke Routing Resource Document - Suburban



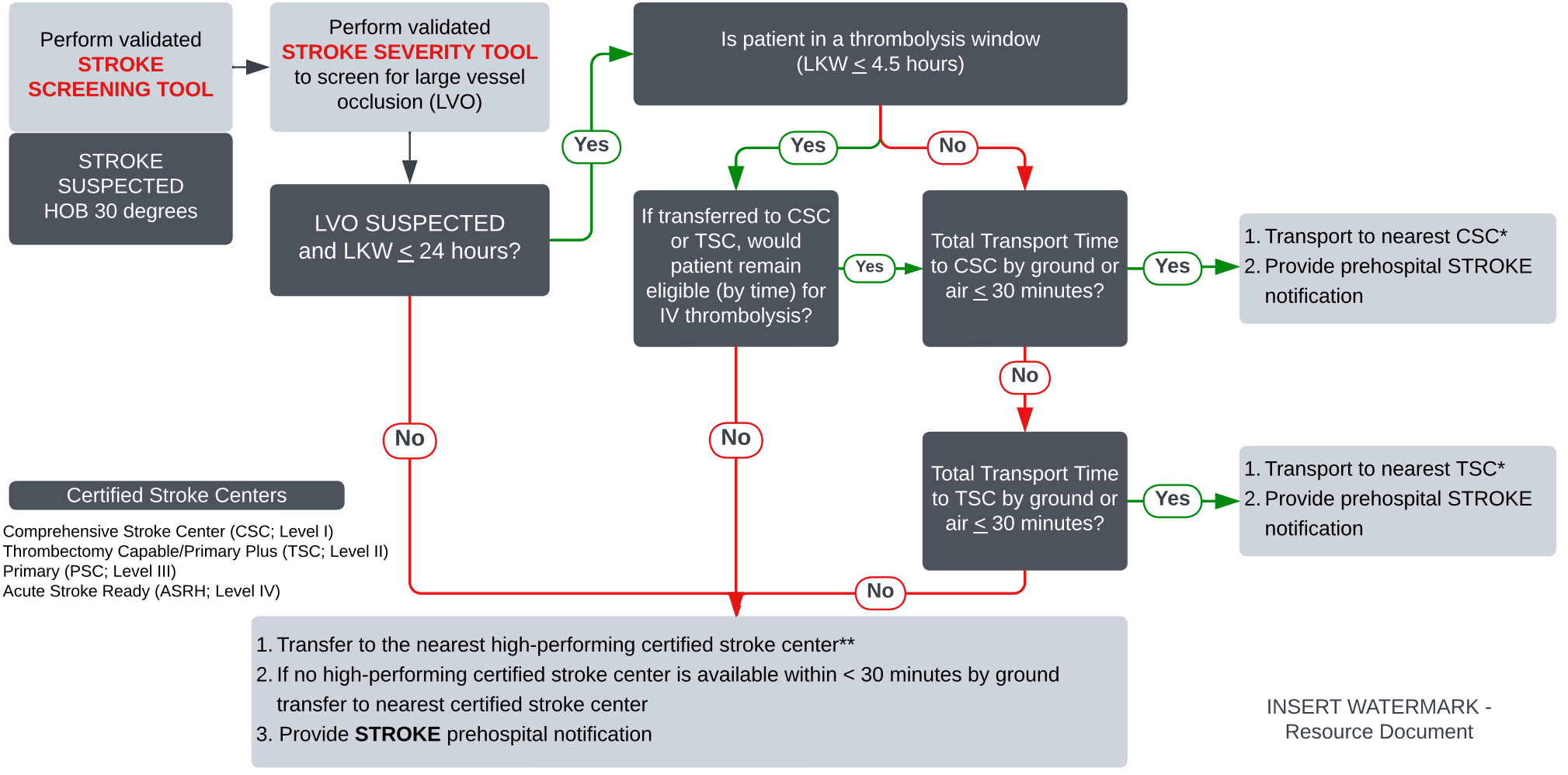
Certified Stroke Centers

Comprehensive Stroke Center (CSC; Level I)
Thrombectomy Capable/Primary Plus (TSC; Level II)
Primary (PSC; Level III)
Acute Stroke Ready (ASRH; Level IV)

LKW - Last known well; LVO - Large Vessel Occlusion; * If LVO suspected, consider air transport from scene response to CSC/TSC
** High-performing certified stroke centers demonstrate efficient thrombolysis delivery and interhospital transfer performance as defined by the region (e.g., median door-to-needle 33 minutes and door-in-door-out 78 minutes, consistent with RACECAT trial benchmarks)

Disclaimer: Regional stroke protocols are developed and implemented based on local guidelines, medical directors' recommendations, and Regional Advisory Councils (RACs). Variations in protocols may exist between different regions. For the most accurate and applicable guidelines, please consult the specific protocols established by your local health authorities and medical professionals.

EMS Acute Stroke Routing Resource Document - Urban



LKW - Last known well; LVO - Large Vessel Occlusion; * If LVO suspected, consider air transport from scene response to CSC/TSC
** High-performing certified stroke centers demonstrate efficient thrombolysis delivery and interhospital transfer performance as defined by the region (e.g., median door-to-needle 33 minutes and door-in-door-out 78 minutes, consistent with RACECAT trial benchmarks).

PREHOSPITAL PEDIATRIC STROKE TRIAGE AND MANAGEMENT

1. **Goals:**

   To increase EMS awareness and identification of strokes in the pediatric population (infants and children less than 18 years of age) and to facilitate rapid triage and transport to the nearest appropriate facility.

2. **Purpose:**

   Pediatric Stroke is a rare disease that is nevertheless among the top ten causes of death in children.[1] However, rapid recognition and appropriate treatment of pediatric stroke can profoundly improve outcomes for these children, sparing them from decades of disability.[2,3] Thrombectomy has been shown to improve outcomes in pediatric patients with large-artery occlusion stroke, and current American Heart Association guidelines now support consideration of mechanical thrombectomy and IV thrombolysis in appropriately selected pediatric patients.[4,5] This guidance document is designed to help EMS providers quickly recognize and triage pediatric stroke patients, thereby improving outcomes throughout the state.

   The **GETAC Prehospital Pediatric Stroke Triage Algorithm** was developed in consultation with EMS, EMS leaders, and local, regional, and state medical authorities. The GETAC pediatric stroke algorithm was developed in consultation with the GETAC Stroke, EMS, Pediatric, EMS Medical Directors Committees and the Council. Available guideline statements[5] and guidance from the GETAC Pediatric Stroke Task Force (a consensus of expert opinion based on clinical experience among Vascular Neurologists, Neuroendovascular Surgeons, Hematologist, and Pediatricians) were integral to the development of this resource document and algorithm.[5-13] The recommendations were developed to ensure that all pediatric patients with a known or suspected stroke are rapidly identified, assessed, and triaged as outlined below. Standardizing care to enable rapid diagnosis and timely appropriate treatment will improve patient outcomes.[9-12] The prehospital pediatric stroke triage and transport recommendations serve to direct the regional triage of pediatric patients with acute stroke to the most appropriate facility. See **Annex A: GETAC Pediatric Prehospital Stroke Triage Algorithm**. There are currently no formal national or statewide guidelines, certification programs, or designation systems for pediatric stroke centers. As such, EMS Medical Directors should identify and designate appropriate receiving facilities for pediatric patients with suspected or confirmed stroke based on local resources and capabilities. These recommendations can serve as a resource to support that process and guide regional decision-making.

   A pediatric stroke destination should have personnel available to care for pediatric stroke patients, including access to a pediatric intensive care unit. These centers should maintain a multidisciplinary team capable of managing pediatric stroke and its complications, with the ability to administer antiplatelet and anticoagulant therapies, as well as provide thrombolytic treatment and perform endovascular thrombectomy when indicated. In addition, pediatric stroke destinations should have the necessary technical

capabilities, including advanced imaging with MRI when available, as well as established policies and procedures to ensure timely, coordinated, and high-quality care for pediatric stroke patients.[9-12] Pediatric hospitals lacking these capabilities should establish protocols to rapidly identify, stabilize, consult, and transfer pediatric stroke patients to centers with appropriate treatment and rehabilitative resources..[9-12]
In regions where a Mobile Stroke Unit is available and operational, and when age-appropriate, based on local protocols, EMS should consider MSU dispatch for suspected pediatric stroke patients. MSUs may facilitate rapid on-scene imaging, specialist consultation, and early treatment, potentially reducing time to diagnosis and intervention. Use of MSU should be guided by regional protocols and resource availability.

3. Prehospital Triage of Stroke in Pediatric Patients

Pediatric stroke may present with age-dependent and often nonspecific symptoms, including focal neurologic deficits, seizures, altered mental status, or unexplained headache or irritability, requiring a high index of suspicion for timely recognition..[9,14-16]

Sudden onset of any of the following suggests the possibility of acute stroke:

- Numbness or weakness of the face, arm, and/or leg (especially on one side of the body)
- Confusion
- Trouble speaking or understanding language.
- Visual disturbances, including double vision or loss of vision in one or both eyes.
- Altered mental status
- Trouble walking
- Dizziness
- Loss of balance or coordination
- Severe headache with no known cause, particularly when associated with altered mental status, which may suggest hemorrhagic stroke.

❖ Patients presenting with any of the above neurologic signs, especially in the presence of relevant risk factors or underlying conditions, should be triaged and managed as a suspected acute stroke.

Patients with any of the following are at higher risk for acute stroke:

- Heart disease
- History of blood vessel problems in the brain
- History of stroke
- Sickle cell disease
- Cancer
- History of blood clots

Common pediatric stroke mimics:

- Alcoholic intoxication
- Cerebral infections
- Drug overdose
- Hypoglycemia
- Hyperglycemia
- Genetic/metabolic disorders
- Atypical migraines
- Neuropathies (e.g., Bell's palsy)
- Seizure
- Post-ictal state
- Tumors

Basic Level

In suspected pediatric stroke cases, assess and treat ABCDEs per universal pediatric recommendations:

- **A (Airway):** Airway support and ventilation assistance are recommended for patients with acute stroke who have decreased consciousness or who have a compromised airway. Suctioning and oropharyngeal or nasopharyngeal airway as needed to ensure airway patency.
- **B (Breathing): Provide** supplemental oxygen as needed to maintain oxygen saturation > 94% with continuous monitoring. Consider the use of end-tidal CO2 monitoring when available.
    - **NOTE:** Some patients with congenital heart disease may have lower baseline oxygen saturation targets (e.g., 80–90%). If the patient's baseline is unclear, confirm typical saturation levels with parents or caregivers when possible.
- **C (Circulation):** Evaluate and treat signs/symptoms of shock according to the Shock Clinical Practice Guidelines
- **D (Disability)**: Assess and document GCS, pupillary size, and reactivity.
- **E (Exposure/Environmental):** Assess for evidence of traumatic injury, especially head injury.

Stabilization and Initial Management:

- If there is evidence of shock, treat according to the shock clinical practice guidelines.
- If hypoglycemia is present (POC glucose < 70 mg/dL),[17] treat according to the clinical practice guidelines for diabetic emergencies.
- If seizures occur, treat according to the seizure clinical practice guidelines.
- Position the patient supine with the head of the bed (HOB) elevated to 30 degrees.
- Continuous cardiac monitoring during transport is recommended.

Cardiovascular Examination:

- Record blood pressure, rate, rhythm, respiratory rate, and oxygen saturation.

- Obtain an ECG when feasible, provided it does not delay transport.

Neurological Assessment for Pediatric Stroke:

- Weakness of the face, arm, and/or leg, particularly on one side of the body.
- Numbness affecting one side of the face or body.
- Confusion
- Trouble speaking or understanding language.
- Visual disturbances, including double vision or loss of vision in one or both eyes.
- Altered mental status
- Trouble walking
- Dizziness
- Loss of balance or coordination
- Severe headache with no known cause, particularly when associated with altered mental status, which may suggest hemorrhagic stroke.
- Seizure with a persistent postictal focal deficit (e.g., weakness) that does not resolve within approximately 15 minutes.

History:

Interview the patient, family members, and other witnesses to determine symptoms, the time of symptom discovery, and the last known well (LKW), defined as the last time the patient was without symptoms. Obtain a focused history, including seizure at onset, head trauma, recent surgeries, history of bleeding disorders or coagulopathy, and signs suggestive of brain hemorrhage such as sudden severe headache, nausea/vomiting with headache, or loss of consciousness. Document contact information, including a mobile phone number for the next of kin and witnesses.

- ❖ **NOTE:** For “wake-up strokes,” the last known well time is the last time the patient was witnessed to be at baseline, which may have been the night before. The time they are found is the time of symptom discovery.

Additional History:

- Obtain relevant past medical history, including prior and recent surgeries.
- Document allergies (e.g., iodinated contrast)
- Obtain history of pre-existing significant disability (e.g., inability to walk independently).
- Obtain device and implant history (e.g., left ventricular assist device, pacemaker, prosthetic valve, ventriculoperitoneal shunt).

Medications:

- Obtain a complete list of medications, including antiplatelet agents (e.g., aspirin, clopidogrel/Plavix) and blood thinners such as direct thrombin inhibitors (e.g., dabigatran/Pradaxa), factor Xa inhibitors (fondaparinux/Arixtra, rivaroxaban/Xarelto, apixaban/Eliquis,

edoxaban/Savaysa), low molecular weight heparin (enoxaparin/ Lovenox), unfractionated heparin, bivalirudin, argatroban, warfarin (Coumadin).
- When possible, document the timing of the last dose of these medications.

Management:
EMS personnel should address ABCDEs in accordance with universal pediatric guidelines. Additional initial management steps include:

- Prevent aspiration by positioning the patient with HOB at 30 degrees. Ensure airway patency with suctioning and the use of an oropharyngeal or nasopharyngeal airway as needed.
- Provide supplemental oxygen as needed to maintain oxygen saturation > 94%.
    - Adjust targets in patients with known congenital heart disease who may have different baseline oxygen saturation goals.
- Treat hypotension according to regional pediatric protocols.
- Maintain blood pressure within appropriate age-based parameters, avoiding levels greater than 20% above the 95th percentile for age.[5,12] Contact online medical control if systolic blood pressure remains persistently above this range. The table below provides an example of the upper limit of systolic blood pressure by age.

Age	Goal Systolic Blood Pressure
1-4 years	<130mmHg
5-10 years	<145mmHg
11-17 years	<160mmHg

- Hypoglycemia (blood glucose < 70 mg/dL) should be promptly treated in patients with suspected of acute ischemic stroke.[17] Evidence in adults demonstrates that persistent hyperglycemia during the first 24 hours after stroke is associated with worse outcomes and an increased risk of hemorrhagic transformation. Accordingly, a target blood glucose range of 140-180 mg/dL is recommended.[5]
- To facilitate an expedited stroke workup upon ED arrival, place two peripheral IVs when feasible, provided this does not delay transport.

System Triage:

- The goal on-scene time is 10-15 minutes or less. If the family is not transported with the patient, encourage them to proceed directly to the ED.
- **Refer to Annex A: GETAC Pediatric *Prehospital Stroke Triage Algorithm*** for guidance on pediatric prehospital stroke triage.

Destination Decision-Making for Suspected Pediatric Stroke in Rural, Urban, and Suburban Areas

Age Criteria and Appropriateness for ADULT Stroke Facilities: Adult stroke centers may vary in their capabilities and willingness to evaluate and treat patients under 18 years of age. EMS Medical Directors, in collaboration with stroke facility leadership, should define age-appropriate destination protocols based on regional resources, institutional capabilities, and hospital policies.

Triage Recommendation:

1. Pediatric patient with suspected stroke who is medically stable and last known well **≤ 24 hours**; triage based on the following criteria:

   Age appropriateness for adult stroke facility:

   - For pediatric patient with suspected stroke who are below the age threshold for evaluation at adult stroke centers, **age < appropriate:**
     - Transport suspected stroke patient to the nearest **Pediatric Stroke Destination***
       - **Pediatric Stroke Destination** – EMS Medical Director will identify and recommend local pediatric stroke destinations. These are typically pediatric hospitals capable of caring for pediatric patients with stroke. Please note that there are currently **NO** formal national or statewide guidelines, certifications, accreditations, or recognition systems for Pediatric Stroke Destinations or pediatric stroke center certification.
     - If a Pediatric Stroke Destination is not accessible within ≤ 60 minutes total transport time by air or ground, or if the patient is unstable, transport to the nearest appropriate pediatric facility.
   - For pediatric patients with suspected stroke, **age ≥ appropriate:**
     - Perform a validated stroke severity screening tool to assess for potential large vessel occlusion (LVO), such as the RACE score.[5,18]
     - **If LVO Screening is Positive:**
       - Transport the patient to the nearest adult Comprehensive Stroke Center (CSC/ Level 1) if it is within ≤ 30 minutes from the nearest Pediatric Stroke Destination and within a total transport time of ≤ 60 minutes by air or ground.
       - If a CSC is not available within 30 minutes, transport to the nearest Thrombectomy Capable Stroke Center (TSC/ Level 2) if it is within ≤ 30 minutes from the nearest Pediatric Stroke Destination and within a total transport time of ≤ 60 minutes by air or ground.
       - If neither a CSC nor TSC is available within ≤ 30 minutes, transport to the nearest Pediatric Stroke Destination.
       - If no Pediatric Stroke Destination is available within ≤ 60 minutes, or the patient is unstable, transport to the nearest appropriate pediatric facility.
     - **If LVO Screening Tool Negative:**
       - Transport suspected stroke patients to the nearest Pediatric Stroke Destination.
       - If a Pediatric Stroke Destination is not accessible within a total transport time of ≤ 60 minutes by air or ground, or the patient is

unstable, transport to the nearest pediatric facility or most appropriate facility.

2. Pediatric patient with suspected stroke who is medically stable and last known well **> 24 hours;** triage based on the following criteria:
    - For pediatric patients with suspected stroke, **for all ages:**
        - Transport the patient to the nearest Pediatric Stroke Destination.
        - If a Pediatric Stroke Destination is not accessible within a total transport time of ≤ 60-minute, or the patient is unstable, transport to the nearest appropriate pediatric facility.

    - ❖ **For all ages:** consider air medical transport if total transport time is anticipated to exceed 60 minutes.
    - ❖ **Stroke Prenotification**: Notify the receiving facility as early as possible that a suspected pediatric stroke patient is en route prior to arrival. Early prenotification allows for activation of appropriate resources prior to patient arrival.
        - Prenotification should include: patient age, last known well, time of symptom discovery, current vital signs, stroke screening tool score (if performed), and key symptoms (e.g., weakness on one side, altered mental status, etc.).
    - ❖ **Hand-off Goal**: Target a streamlined EMS-to-ED handoff time of ≤ 120 seconds to facilitate rapid triage and continuation of care.

(Note – This document represents a revision of the 2025 GETAC Pediatric Stroke Triage Recommendations, updated to align with the latest guideline statements and adapted from the North Central Texas Trauma Regional Advisory Council (NCTTRAC) Regional Stroke Plan.)

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PREHOSPITAL ADULT STROKE TRIAGE AND MANAGEMENT

1. **Goal**
   - The GETAC endorsed a triage recommendation to assist pre-hospital providers with the rapid identification, assessment, and triage of all suspected stroke patients in Texas. This recommendation aims to lower barriers to seeking emergency care for stroke and ensure that stroke patients receive care at appropriate facilities promptly.

2. **Purpose**
   - In consultation with emergency medical services (EMS) leaders, local, regional, and state agencies, as well as medical authorities, current national guideline statements, and local experts, the following recommendations seek to ensure that all patients with a known or suspected stroke are rapidly identified, assessed, and triaged as outlined below.[1-15] 9-1-1 call centers and EMS dispatchers are encouraged to use standardized approaches to prehospital stroke assessment, triage, management, and interfacility documentation.
   - **Dispatcher Best Practices:** Consistent with the 2026 AHA/ASA AIS Guideline, EMS dispatchers and 9-1-1 call centers should: (1) use a validated telephone stroke assessment tool (e.g., CPSS, FAST, or MPDS) to identify stroke, reduce on-scene time, and prioritize transport (Class IIa, Level B-NR), as stroke-specific tools yield substantially higher sensitivity than unstructured interviews; (2) dispatch EMS within 90 seconds of the 9-1-1 call and relay all stroke-relevant information (symptom onset/last known well, deficits, patient baseline) to responding units; (3) activate the highest-priority response and, for suspected large vessel occlusion (LVO) where ground transport exceeds regional thresholds, consider early air medical notification; (4) complete stroke-specific dispatcher training with validated recognition scripts; and (5) participate in regional quality improvement (QI) programs that monitor dispatch performance metrics and provide feedback to sustain improvement (Class IIa, Level B-NR).[2]
   - The prehospital acute stroke triage and transport recommendations serve to direct the triage of adult patients (greater than $\geq$ 18 years of age) to the most appropriate facility based on the duration and severity of symptoms. The **GETAC Adult Prehospital Stroke Triage Algorithm** is based on multi-society endorsed guideline statements and recommendations,[1-15] consensus of expert opinion (Vascular Neurologists, Neuroendovascular Surgeons, and Neurosurgeons) based on clinical experience and in consultation with the GETAC council, EMS, EMS Medical Directors, Air Medical, and Stroke Committees. *See* ***Annex A, B, and C: GETAC Adult*** **Prehospital Stroke Triage Algorithm**
   - Regional stakeholders should collaborate to consider local prehospital and health care resources, individual stroke center performance, and geographic considerations to create an optimal stroke system of care (SSOC) and destination protocol to ensure effective and efficient stroke care.[1,4,10,13-15] Ideal destination plans should factor in all available data sources, including traffic patterns, site-specific performance data, and associated clinical outcomes.[1,4,15] EMS agencies should implement destination plans based on time and severity for patients with suspected large vessel occlusion (LVO) within 24 hours of the last known well. These plans should prioritize a nearby comprehensive stroke

center (CSC) over other centers of lower capability when available within acceptable transport times.[4,14-16]

- Consistent with the 2026 AHA/ASA Guideline for the Early Management of Patients with Acute Ischemic Stroke, EMS destination protocols should give priority to **high-performing certified stroke centers** that demonstrate efficient reperfusion delivery and interhospital transfer performance. High-performing certified stroke centers are those that consistently achieve rapid door-to-needle times (e.g., median ≤33 minutes) and short door-in-door-out (DIDO) times for interhospital transfers (e.g., ≤78 minutes, consistent with RACECAT trial benchmarks).[17]Regional stakeholders should use site-specific performance data to define high-performing centers within their systems of care. The 2026 AHA/ASA Guideline further specifies that in areas with well-coordinated stroke systems of care and local hospitals proficient in thrombolysis and secondary interhospital transfer, direct transport of patients with suspected LVO to a distant (e.g., 45–60 min) stroke center certified for thrombectomy compared with transport to a capable local stroke center does not improve 3-month clinical outcomes (Class III: No Benefit). EMS and hospital systems should establish formal agreements and protocols to prioritize interhospital transfer and minimize DIDO times for patients with acute stroke needing a higher level of care (Class I; 2026 AHA/ASA AIS Guideline).[2]
- In response to the perceived need for greater access to thrombectomy, several of the accrediting agencies for stroke centers introduced a fourth level of certification for facilities that can effectively perform endovascular treatment (EVT) but do not meet all the criteria of a CSC, the Thrombectomy Capable Stroke Center (TSC). The American Stroke Association 2019 SSOC Recommendations and the American Heart Association (AHA) Mission: Lifeline Stroke state that the TSC certification is intended for regions of the country that are not readily accessible to CSCs; a CSC is the preferred destination for patients with suspected LVO when within acceptable transport times.[1,4,14] If no CSC is available, a TSC should be the preferred destination for these patients from among all nearby primary stroke centers (PSCs).[1,2,4,14]
- The AHA Lifeline Stroke Committee felt it was best to err on the side of caution and initially set the total transport time from the scene to CSC at 30 minutes for an urban area, 45 minutes in a suburban area, and 60 minutes in a rural area. However, patients eligible for IV thrombolysis (0-4.5 hours from last known well) should be routed to the nearest stroke facility if transport to the nearest CSC or TSC would make them ineligible for thrombolysis due to the additional transport time. In suburban and rural settings, prehospital destination plans and interfacility transport policies should prioritize transporting suspected LVO patients to a facility with well-defined evaluation and stabilization protocols to minimize Door-In-Door-Out (DIDO) times for patients requiring transfer to a higher level of care.[4,10,14] Additional transport time, including air medical transport, may be reasonable in rural communities or where large distances separate stroke centers.[1,4,13,14]

3. SSOC Modification for Metropolitan, Non-Metropolitan, and Frontier Regions

- The following is adapted from the AHA Mission: Lifeline Stroke recommendation for Emergency Medical Services for acute stroke

triage and routing.[1,2,4,13,14] These modifications to transport time thresholds are suggested to help EMS agencies adjust their regional stroke triage protocols in collaboration with local resources and key stakeholders.[4,13,14]

- A Metropolitan SSOC modification is appropriate for a metro region (Urban/RUCA code 1)[4,18] These areas have a high population density (50,000+ inhabitants) and abundant healthcare resources, with EMS access to one or more TSC/CSC within 30 minutes by ground transport.[4,14]
- A Non-Metropolitan SSOC modification is appropriate for large residential communities adjacent to an urban core (Suburban/RUCA codes 2-3).[4,18] These areas generally have a population density closer to the urban threshold. They may have access to nearby community hospitals and 60-minute transport by EMS, either by air or ground.[4,14] Patients with suspected LVO should be routed directly to a CSC if the maximum transport time from the scene to the CSC does not exceed 45 minutes. If no CSC is within 45 minutes, then EMS should go directly to a TSC if the maximum total transport time from the scene to the TSC does not exceed 45 minutes. If no TSC or CSC is available within 45 minutes of the total travel time, EMS should go to the nearest acute stroke-ready hospital (ASRH) or PSC.[4,14]
- A Frontier SSOC modification is appropriate for a small or non-metropolitan region (Rural/RUCA codes 4-10).[4,18] These areas generally have low population density (<50,000 inhabitants), limited local general healthcare resources, few nearby ASRH or PSC, and often no TSC/CSC within 60 minutes ground transport, although there may be one within 60 minutes by air.[4,14] Patients with suspected LVO should be routed directly to a CSC if the maximum total transport time from the scene to the CSC does not exceed 60 minutes.[4,14] If no CSC is within 60 minutes, then EMS should go directly to a TSC if the maximum total transport time from the scene to the TSC does not exceed 60 minutes.[4,14] Consider air medical transport if no certified stroke center is within 60 minutes by ground. If air transfer is unavailable, transfer the patient to the nearest hospital per the regional stroke plan.[4,14]

- The COVID-19 pandemic further emphasized the need for flexible prehospital triage and interfacility transport adaptation in response to local and regional factors. Preferential routing of suspected LVO patients to centers with thrombectomy capability may be even more important when in-hospital and interfacility delays are exacerbated, as in conditions such as the COVID-19 pandemic.[19]

- **Role of Mobile Stroke Units (MSUs):** In regions where Mobile Stroke Units (MSUs) are available, their use over conventional EMS is recommended (Class I, Level A; 2026 AHA/ASA AIS Guideline) for the transport and management of thrombolytic-eligible patients to ensure the fastest achievable onset-to-treatment time and improve functional outcomes.[2] MSUs are specialized ambulances staffed by interdisciplinary teams (including paramedics, nurses, and physicians or telemedicine consultants) equipped to perform point-of-care neuroimaging, initiate intravenous thrombolysis in the field, and provide comprehensive prehospital notification to receiving stroke teams. When available, MSUs can also identify and triage EVT-eligible patients (Class IIa, Level B-NR; 2026

AHA/ASA AIS Guideline) to the appropriate thrombectomy-capable facility with advanced activation of receiving stroke and interventional teams. Regional EMS systems and stroke networks should integrate MSU protocols into their destination plans where operationally feasible.

4. Prehospital Triage of Stroke in Adult Patients

- **Basic Level**:
  - Assess and support ABCEs according to UNIVERSAL CARE – ADULT:
    - **A (Airway)**: Airway support and ventilator assistance are recommended for patients with acute stroke who have decreased consciousness or a compromised airway. Suctioning and oropharyngeal or nasopharyngeal airway as needed to ensure airway patency.
    - **B (Breathing)**: Supplemental oxygen should be provided to maintain oxygen saturation >94% (continuous monitoring).[2]
    - **C (Circulation)**: Evaluate, document, and treat signs/symptoms of shock according to the Shock Clinical Practice Guidelines (CPG).
    - **D (Disability)**: Assess and document GCS, pupillary size, and reactivity.
    - **E (Exposure/Environmental)**: Assess for evidence of traumatic injury, especially head injury.
- **Positioning and Stabilization**:
  - Place the patient in a supine position, with the head of the bed elevated at 30 degrees, if the patient can tolerate.[2,10] Keeping the patient at 30 degrees can improve blood flow to the brain[20,21] and is recommended if the patient can tolerate.[2,10] Avoid lying the patient flat unless an LVO is documented,[22,23] and the patient is not at risk for elevated intracranial pressure or herniation.[21]
  - Ensure airway patency with suctioning and oropharyngeal airway or nasopharyngeal airway as needed.
  - Cardiac monitoring during transport is recommended. Obtaining an EKG during workup is acceptable as long as it does not delay transport to the appropriate stroke facility.[2]
  - Treat hypotension. Evaluate, document, and treat signs/symptoms of shock according to the **Shock CPG**.
  - If hypoglycemia is present (POC glucose <60 mg/gL),[2] treat according to **Diabetic Emergencies CPG**. Hyperglycemia in acute ischemic stroke is associated with worse clinical outcomes,[24,25] including greater infarct growth[26,27] and hemorrhagic infarct conversion.[28,29]
  - If there is Seizure activity, treat according to the **Seizure CPG**.
- **Management**:
  - EMS personnel should begin the initial management of stroke in the field as outlined in this document.
  - Provide supplemental oxygen if needed to keep oxygen saturation >94%.[2]
  - Treatment of hypertension is **NOT** recommended unless blood pressure is >220/120 mmHg.[2]
  - Per the 2026 AHA/ASA AIS Guideline, both **alteplase** (0.9 mg/kg IV, max 90 mg) and **tenecteplase** (0.25 mg/kg IV, max 25 mg) are now recommended (Class I) for eligible patients within the 4.5-hour

thrombolytic window.[2] EMS should document and communicate the patient's weight to the receiving facility to facilitate rapid dosing.
    - Avoid dextrose-containing fluids in non-hypoglycemic patients.[2]
    - Perform and document a POC Glucose analysis and treat according to the ASA 2026 Guidelines for Management of Acute Ischemic Stroke.[2]
        - Hypoglycemia (blood glucose <60 mg/dL) should be treated in patients suspected of acute ischemic stroke.[2]
    - To facilitate expedited stroke workup in the ED, place at least one 18 or 20-gauge IV in the antecubital fossa or forearm (right preferred).
    - To facilitate the fastest Door-to-Needle and stroke care, collect blood samples to provide the receiving facility, as long as it does not delay the transfer.
- **Assessment**:
    - **History** - Interview patients, family members, and other witnesses to **determine symptoms**, **time of symptom discovery**, and **last known well** or last time patient without symptoms:
        - Obtain a mobile number for the next of kin and witnesses.
        - **NOTE**: For "wake-up strokes," the time documented is the time the patient was last known well, not the time the patient was found.
        - **NOTE**: Sudden onset of any of the following suggests the possibility of acute stroke:
            - Numbness or weakness of the face, arm, and/or leg (especially on one side of the body)
            - Confusion
            - Trouble speaking or understanding language
            - Double vision, trouble seeing in one or both eyes
            - Trouble walking
            - Dizziness
            - Loss of balance or coordination
            - Sudden onset of severe headache with no known cause (suggests hemorrhagic stroke)
            - Any asymmetry of the neurological exam
    - **Additional History**:
        - Obtain the patient's history, including co-morbid conditions, past medical history, recent surgeries, prior strokes, and allergies (iodinated contrast).
        - Items to report: seizure at onset of stroke symptoms, head trauma, history of recent surgeries, history of bleeding problems, history of recent stroke, signs of possible brain hemorrhage [severe headache of sudden onset, nausea/vomiting with headache or loss of consciousness (LOC)].
        - Obtain dates for **recent events**: surgery, stroke, bleed, or trauma.
        - Additional history: ask if symptoms are associated with a severe headache of sudden onset, loss of consciousness, nausea/vomiting, or the worst headache of their life.
        - Be alert to common stroke mimics*.
        - Determine if the patient has a substantial pre-existing disability (e.g., need for nursing home care or unable to walk

independently).
        - Obtain a list of all medications including: antiplatelet agents (e.g., aspirin, clopidogrel [Plavix]) and blood thinners (direct thrombin inhibitors [dabigatran/Pradaxa], factor Xa inhibitors [fondaparinux/Arixtra, rivaroxaban/Xarelto, apixaban/Eliquis, edoxaban/Savaysa], low molecular weight heparin [enoxaparin/ Lovenox], unfractionated heparin, bivalirudin, argatroban, or warfarin [Coumadin]).
            - If possible, record when the patient took the last dose.
        - Device/implant history (e.g., left ventricular assist device, pacemaker, valve replacement).
- **Examination**:
    - Assess and record blood pressure, rate, rhythm, respiratory rate, and oxygen saturation.
    - Apply a validated and standardized instrument for stroke screening, such as: FAST (Face, Arm, Speech, Test), Balance Eyes Face Arm Speech Time Tool (BEFAST), Los Angeles Prehospital Stroke Screen, Melbourne Ambulance Stroke Screen, or Cincinnati Prehospital Stroke Scale.[1,2,4,10,30-37]
    - In prehospital patients who screen positive for suspected stroke, apply a standard prehospital stroke severity assessment tool such as the Cincinnati Stroke Triage Assessment Tool (CSTAT), Field Assessment Stroke Triage for Emergency Destination (FAST-ED), Rapid Arterial Occlusion Evaluation Scale (RACE), Prehospital Acute Stroke Severity (PASS), Gaze-Face-Arm-Speech-Time (G-FAST), Conveniently-Grasped Field Assessment Stroke Triage (CG-FAST), Vision, Aphasia, Neglect (VAN) Assessment, Austrian Prehospital Stroke Scale, and Ventura Emergent LVO Score.[1,2,4,10,30,34,35,37-42]
- **System Triage**:
    - The goal for on-scene time is 10-15 minutes or less. If the family is not transported with the patient, encourage them to go directly to the ED.
    - See **Annex A, B, and C: Adult *Prehospital Stroke Triage Algorithm*** forthe adult prehospital stroke triage algorithm.
    - **Call stroke alert** and pre-notify the receiving facility that a suspected stroke patient is en route so that the appropriate resources may be mobilized before the patient's arrival.[10,43]
    - **Pre-notification** should include the patient's name, age, LKW, time of symptom discovery, vitals, blood glucose, stroke screen and severity score, blood thinner history and last dose, sudden severe headache or loss of consciousness with symptom onset, and the phone number for the next of kin.[10]
    - Goal: 30 seconds for EMS to ED triage nursehand-off.
    - **Bypass Exclusions**:
        - If severe or life-threatening trauma is suspected in addition to stroke, transfer to the appropriate level trauma center.
        - Patients under hospice care or with Medical Orders for Scope of Treatment (MOST) that outline no emergency measures should go to the nearest appropriate hospital.
    - Common ischemic **stroke mimics**: alcoholic intoxication, cerebral infections, drug overdose, hemorrhagic stroke, hypoglycemia, hyperglycemia, metabolic disorders, atypical migraines, neuropathies

(e.g., Bell’s palsy), seizure, post-ictal state, and tumors.

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Pediatric Stroke Tip Sheet: Initial ED Recommendations for Receiving Facilities

Audience: Emergency Departments receiving children with *suspected* stroke (Primary Stroke Centers, freestanding EDs, Comprehensive Stroke Centers)

Purpose: Provide a practical, early action orientation for the first 30–60 minutes of care when a child presents with *suspected* stroke. This document emphasizes early recognition, stabilization, imaging, consultation, and timely transfer.

Important: Pediatric stroke cannot be definitively diagnosed in the field and is rare. This tip sheet is not a guideline, mandate, or standard of care. Local policies, resources, and clinician judgment apply.

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1) When to Suspect Pediatric Stroke

Maintain stroke on the differential when a child has sudden onset neurologic symptoms, including:

- Focal weakness or numbness (face/arm/leg)
- Speech or language difficulty
- Vision loss or diplopia
- Ataxia and imbalance
- Vertigo in combination with other symptoms
- New seizure with persistent focal deficit
- Altered mental status with lateralizing signs
- Severe headache with neurologic change

Note: Stroke mimics are common (>50%) in children, but many stroke mimics are neurologic emergencies.[1–3] Early stroke activation is appropriate when concern exists.

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2) Immediate Actions on Arrival (First 10–15 Minutes)

Focus on medical stabilization and timely transfer:

- Activate the local stroke process or equivalent rapid response
- Support airway, breathing, circulation; provide oxygen as needed
- Check glucose promptly
- Establish IV access (do not delay imaging/transfer)
- Position head of bed ~30° if tolerated
- Document Last Known Well (LKW) clearly (for wake-up events, LKW is last time at baseline)
- Brief neurologic assessment (e.g., BE-FAST; severity screen if used locally)

- Avoid aggressive blood pressure lowering in the acute setting unless medically indicated for another reason.[4]

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3) Imaging: What Is Reasonable

Non-contrast CT head is appropriate and widely available and is used to identify intracranial hemorrhage and large, established infarcts.

CTA head/neck is reasonable when ischemic stroke is suspected, and can diagnose large artery occlusions in children.

MRI may be preferred at pediatric centers when readily available without delay, **but should not delay transfer.**

Vascular imaging should be obtained when feasible without delaying transfer, particularly when large artery occlusion is suspected. Avoid prolonged or sequential imaging that delays consultation or transfer.

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4) Early Decision-Making: Stabilize and Move Forward

When there is strong clinical suspicion for pediatric stroke, many Primary Stroke Centers and freestanding EDs may not have rapid access to immediate pediatric neurology consultation. In these settings, the priority should be early stabilization and timely transfer to a facility with pediatric stroke expertise.

- Initiate local stroke processes and complete initial stabilization and imaging
- Begin transfer planning early rather than waiting for definitive diagnosis
- Consultation with a pediatric neurologist or regional pediatric stroke-capable center is encouraged when readily available, but should not delay transfer
- Immediate specialty phone consultation may not be feasible in all locations. When in doubt, early transfer is appropriate and preferred
- Transfer planning should not wait for MRI confirmation in cases of suspected pediatric stroke

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5) Transfer: When to Prioritize Early Transfer

Early transfer should be prioritized when any of the following apply:

- Strong suspicion for stroke with limited local pediatric expertise
- Need for pediatric neurology, neurosurgery, or pediatric ICU monitoring
- Consideration of endovascular evaluation, advanced stroke therapies, or vascular imaging

- Transfer planning should occur in parallel with stabilization and imaging

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6) Where to Transfer

There is no formal national or statewide certification system for pediatric stroke centers. Facilities most appropriate to receive children with suspected or confirmed stroke should be determined locally based on available resources, expertise, and established regional plans.

In many counties—particularly near large metropolitan areas—the most appropriate destination will be a tertiary care children's hospital with pediatric neurology, neurosurgery, hematology and pediatric intensive care capabilities.

Some Comprehensive Stroke Centers (CSCs) may be willing to accept older adolescents (e.g., age ≥16 years), but this varies by institution and should be determined at the local or regional level.

In general:

- Transfer to the nearest large children's hospital is often the best course of action for suspected stroke in younger children
- Consider CSC transfer for older adolescents, particularly when a large artery occlusion is suspected and local agreements support this pathway

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7) Advanced Stroke Therapies: Key Principles

Endovascular thrombectomy may benefit carefully selected children and adolescents with large artery occlusion and disabling stroke.[5–8] Evaluation and treatment should occur at centers with appropriate pediatric and neurointerventional expertise. Transfer to comprehensive stroke centers willing and able to treat pediatric patients may be reasonable for older children with confirmed large artery occlusion.

Per 2026 AHA guidelines,[4] intravenous thrombolysis *may be considered* for children and adolescents younger than 18 years with confirmed arterial ischemic stroke, disabling neurologic deficits, and treatment initiation within 4.5 hours of last known well. When considered, thrombolytic therapy should be given by, or in consultation with, clinicians with expertise managing pediatric stroke.

Decisions regarding advanced therapies should not delay stabilization or transfer to an appropriate receiving facility.

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8) Key Reminders

- Pediatric stroke is rare but time-sensitive
- Early recognition can improve outcomes
- Stabilize and transfer. Do not wait for certainty.

Disclaimer

This document reflects expert consensus and educational guidance to support early stabilization and decision-making for children with suspected stroke. It does not establish standards of care, define pediatric stroke centers, or supersede local policies. Practices should be adapted to patient needs, institutional resources, and clinician judgment.

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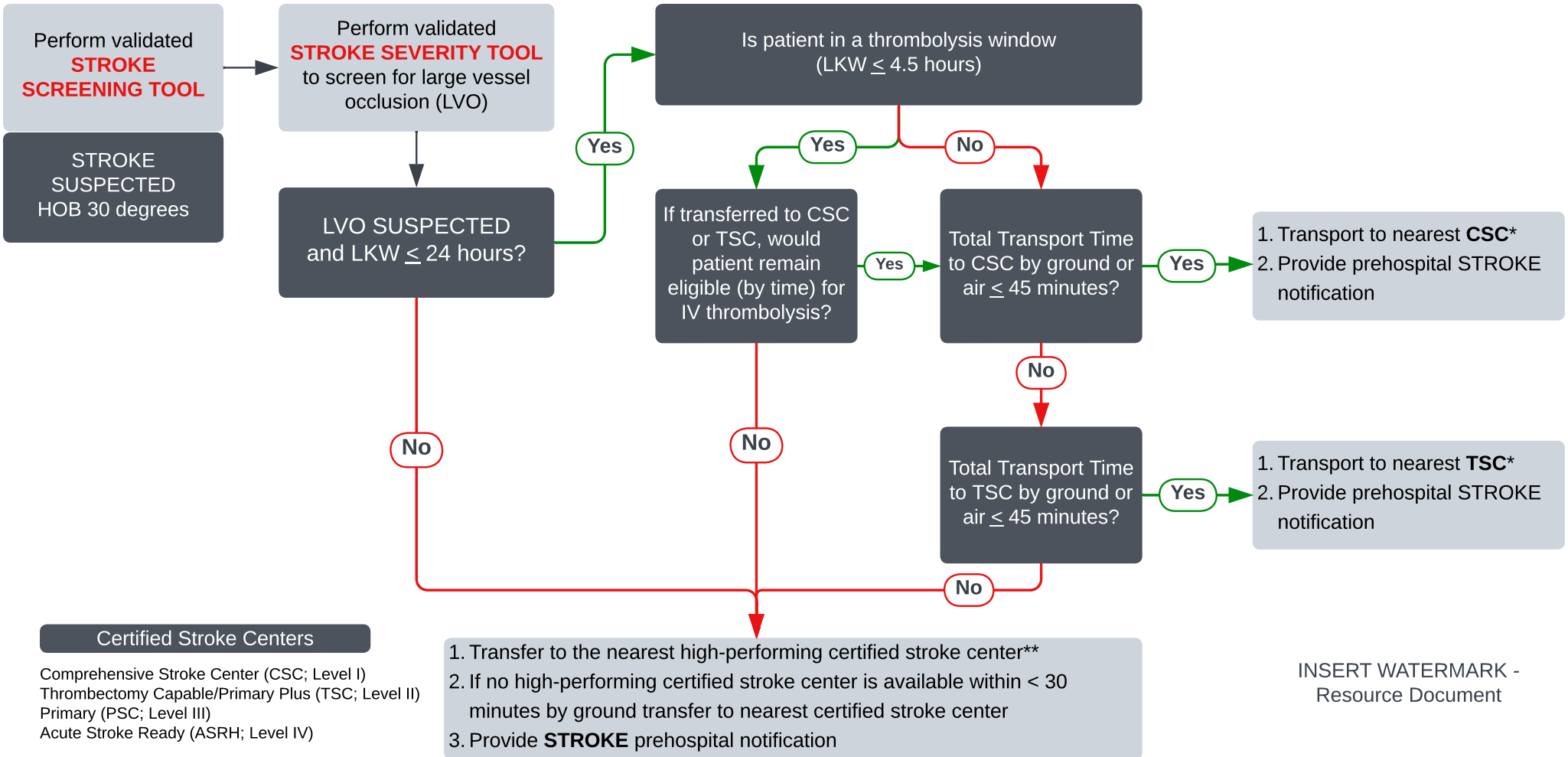
EMS Acute Stroke Routing Resource Document - Suburban



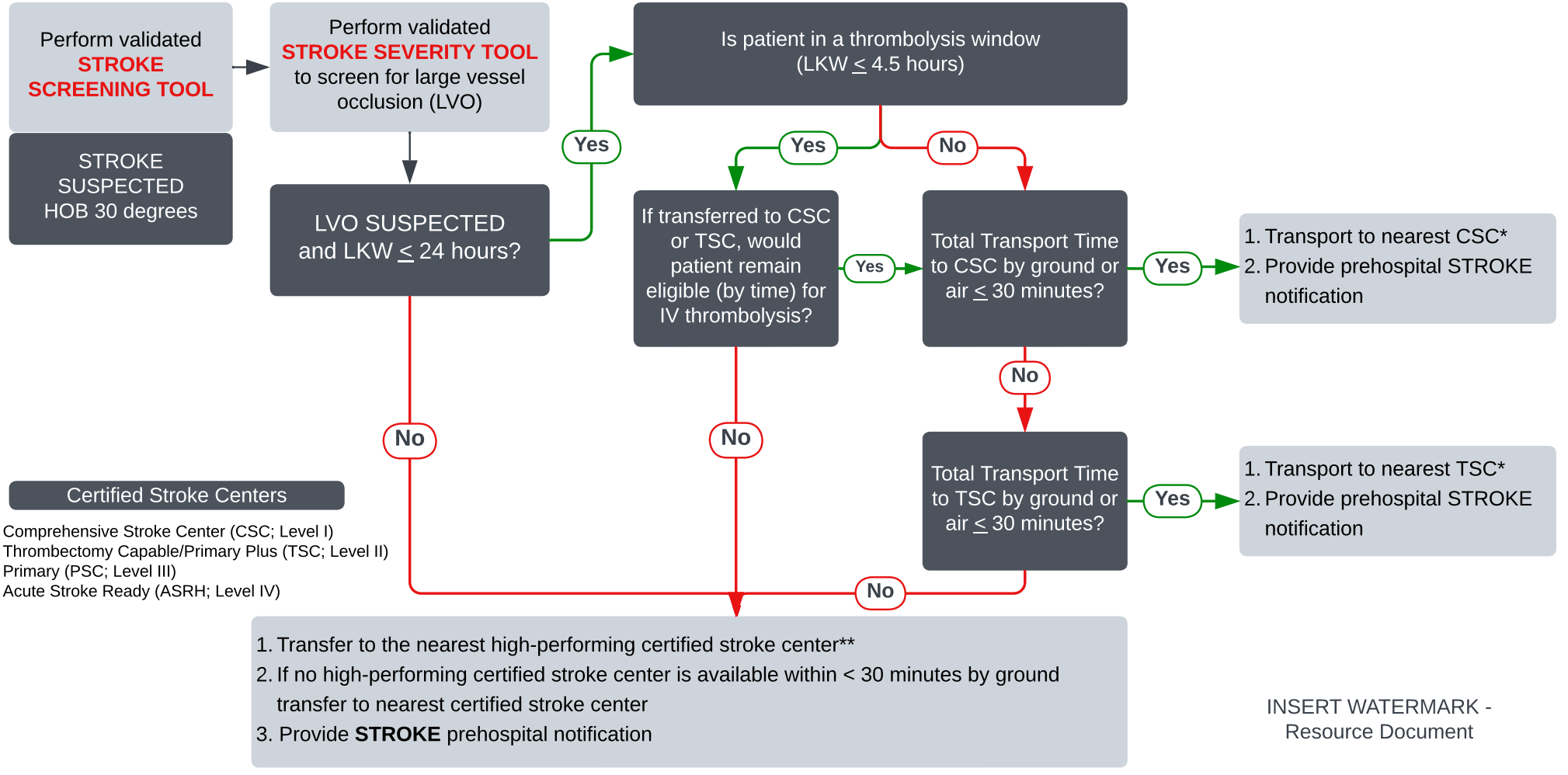
Certified Stroke Centers

Comprehensive Stroke Center (CSC; Level I)
Thrombectomy Capable/Primary Plus (TSC; Level II)
Primary (PSC; Level III)
Acute Stroke Ready (ASRH; Level IV)

LKW - Last known well; LVO - Large Vessel Occlusion; * If LVO suspected, consider air transport from scene response to CSC/TSC
** High-performing certified stroke centers demonstrate efficient thrombolysis delivery and interhospital transfer performance as defined by the region (e.g., median door-to-needle 33 minutes and door-in-door-out 78 minutes, consistent with RACECAT trial benchmarks)

Disclaimer: Regional stroke protocols are developed and implemented based on local guidelines, medical directors' recommendations, and Regional Advisory Councils (RACs). Variations in protocols may exist between different regions. For the most accurate and applicable guidelines, please consult the specific protocols established by your local health authorities and medical professionals.

EMS Acute Stroke Routing Resource Document - Urban



LKW - Last known well; LVO - Large Vessel Occlusion; * If LVO suspected, consider air transport from scene response to CSC/TSC
** High-performing certified stroke centers demonstrate efficient thrombolysis delivery and interhospital transfer performance as defined by the region (e.g., median door-to-needle 33 minutes and door-in-door-out 78 minutes, consistent with RACECAT trial benchmarks).

PREHOSPITAL PEDIATRIC STROKE TRIAGE AND MANAGEMENT

1. **Goals:**

   To increase EMS awareness and identification of strokes in the pediatric population (infants and children less than 18 years of age) and to facilitate rapid triage and transport to the nearest appropriate facility.

2. **Purpose:**

   Pediatric Stroke is a rare disease that is nevertheless among the top ten causes of death in children.[1] However, rapid recognition and appropriate treatment of pediatric stroke can profoundly improve outcomes for these children, sparing them from decades of disability.[2,3] Thrombectomy has been shown to improve outcomes in pediatric patients with large-artery occlusion stroke, and current American Heart Association guidelines now support consideration of mechanical thrombectomy and IV thrombolysis in appropriately selected pediatric patients.[4,5] This guidance document is designed to help EMS providers quickly recognize and triage pediatric stroke patients, thereby improving outcomes throughout the state.

   The **GETAC Prehospital Pediatric Stroke Triage Algorithm** was developed in consultation with EMS, EMS leaders, and local, regional, and state medical authorities. The GETAC pediatric stroke algorithm was developed in consultation with the GETAC Stroke, EMS, Pediatric, EMS Medical Directors Committees and the Council. Available guideline statements[5] and guidance from the GETAC Pediatric Stroke Task Force (a consensus of expert opinion based on clinical experience among Vascular Neurologists, Neuroendovascular Surgeons, Hematologist, and Pediatricians) were integral to the development of this resource document and algorithm.[5-13] The recommendations were developed to ensure that all pediatric patients with a known or suspected stroke are rapidly identified, assessed, and triaged as outlined below. Standardizing care to enable rapid diagnosis and timely appropriate treatment will improve patient outcomes.[9-12] The prehospital pediatric stroke triage and transport recommendations serve to direct the regional triage of pediatric patients with acute stroke to the most appropriate facility. See **Annex A: GETAC Pediatric Prehospital Stroke Triage Algorithm**. There are currently no formal national or statewide guidelines, certification programs, or designation systems for pediatric stroke centers. As such, EMS Medical Directors should identify and designate appropriate receiving facilities for pediatric patients with suspected or confirmed stroke based on local resources and capabilities. These recommendations can serve as a resource to support that process and guide regional decision-making.

   A pediatric stroke destination should have personnel available to care for pediatric stroke patients, including access to a pediatric intensive care unit. These centers should maintain a multidisciplinary team capable of managing pediatric stroke and its complications, with the ability to administer antiplatelet and anticoagulant therapies, as well as provide thrombolytic treatment and perform endovascular thrombectomy when indicated. In addition, pediatric stroke destinations should have the necessary technical

capabilities, including advanced imaging with MRI when available, as well as established policies and procedures to ensure timely, coordinated, and high-quality care for pediatric stroke patients.[9-12] Pediatric hospitals lacking these capabilities should establish protocols to rapidly identify, stabilize, consult, and transfer pediatric stroke patients to centers with appropriate treatment and rehabilitative resources..[9-12]
In regions where a Mobile Stroke Unit is available and operational, and when age-appropriate, based on local protocols, EMS should consider MSU dispatch for suspected pediatric stroke patients. MSUs may facilitate rapid on-scene imaging, specialist consultation, and early treatment, potentially reducing time to diagnosis and intervention. Use of MSU should be guided by regional protocols and resource availability.

3. Prehospital Triage of Stroke in Pediatric Patients

Pediatric stroke may present with age-dependent and often nonspecific symptoms, including focal neurologic deficits, seizures, altered mental status, or unexplained headache or irritability, requiring a high index of suspicion for timely recognition..[9,14-16]

Sudden onset of any of the following suggests the possibility of acute stroke:

- Numbness or weakness of the face, arm, and/or leg (especially on one side of the body)
- Confusion
- Trouble speaking or understanding language.
- Visual disturbances, including double vision or loss of vision in one or both eyes.
- Altered mental status
- Trouble walking
- Dizziness
- Loss of balance or coordination
- Severe headache with no known cause, particularly when associated with altered mental status, which may suggest hemorrhagic stroke.

❖ Patients presenting with any of the above neurologic signs, especially in the presence of relevant risk factors or underlying conditions, should be triaged and managed as a suspected acute stroke.

Patients with any of the following are at higher risk for acute stroke:

- Heart disease
- History of blood vessel problems in the brain
- History of stroke
- Sickle cell disease
- Cancer
- History of blood clots

Common pediatric stroke mimics:

- Alcoholic intoxication
- Cerebral infections
- Drug overdose
- Hypoglycemia
- Hyperglycemia
- Genetic/metabolic disorders
- Atypical migraines
- Neuropathies (e.g., Bell's palsy)
- Seizure
- Post-ictal state
- Tumors

Basic Level

In suspected pediatric stroke cases, assess and treat ABCDEs per universal pediatric recommendations:

- **A (Airway):** Airway support and ventilation assistance are recommended for patients with acute stroke who have decreased consciousness or who have a compromised airway. Suctioning and oropharyngeal or nasopharyngeal airway as needed to ensure airway patency.
- **B (Breathing): Provide** supplemental oxygen as needed to maintain oxygen saturation > 94% with continuous monitoring. Consider the use of end-tidal CO2 monitoring when available.
    - **NOTE:** Some patients with congenital heart disease may have lower baseline oxygen saturation targets (e.g., 80–90%). If the patient's baseline is unclear, confirm typical saturation levels with parents or caregivers when possible.
- **C (Circulation):** Evaluate and treat signs/symptoms of shock according to the Shock Clinical Practice Guidelines
- **D (Disability)**: Assess and document GCS, pupillary size, and reactivity.
- **E (Exposure/Environmental):** Assess for evidence of traumatic injury, especially head injury.

Stabilization and Initial Management:

- If there is evidence of shock, treat according to the shock clinical practice guidelines.
- If hypoglycemia is present (POC glucose < 70 mg/dL),[17] treat according to the clinical practice guidelines for diabetic emergencies.
- If seizures occur, treat according to the seizure clinical practice guidelines.
- Position the patient supine with the head of the bed (HOB) elevated to 30 degrees.
- Continuous cardiac monitoring during transport is recommended.

Cardiovascular Examination:

- Record blood pressure, rate, rhythm, respiratory rate, and oxygen saturation.

- Obtain an ECG when feasible, provided it does not delay transport.

Neurological Assessment for Pediatric Stroke:

- Weakness of the face, arm, and/or leg, particularly on one side of the body.
- Numbness affecting one side of the face or body.
- Confusion
- Trouble speaking or understanding language.
- Visual disturbances, including double vision or loss of vision in one or both eyes.
- Altered mental status
- Trouble walking
- Dizziness
- Loss of balance or coordination
- Severe headache with no known cause, particularly when associated with altered mental status, which may suggest hemorrhagic stroke.
- Seizure with a persistent postictal focal deficit (e.g., weakness) that does not resolve within approximately 15 minutes.

History:

Interview the patient, family members, and other witnesses to determine symptoms, the time of symptom discovery, and the last known well (LKW), defined as the last time the patient was without symptoms. Obtain a focused history, including seizure at onset, head trauma, recent surgeries, history of bleeding disorders or coagulopathy, and signs suggestive of brain hemorrhage such as sudden severe headache, nausea/vomiting with headache, or loss of consciousness. Document contact information, including a mobile phone number for the next of kin and witnesses.

- ❖ **NOTE:** For “wake-up strokes,” the last known well time is the last time the patient was witnessed to be at baseline, which may have been the night before. The time they are found is the time of symptom discovery.

Additional History:

- Obtain relevant past medical history, including prior and recent surgeries.
- Document allergies (e.g., iodinated contrast)
- Obtain history of pre-existing significant disability (e.g., inability to walk independently).
- Obtain device and implant history (e.g., left ventricular assist device, pacemaker, prosthetic valve, ventriculoperitoneal shunt).

Medications:

- Obtain a complete list of medications, including antiplatelet agents (e.g., aspirin, clopidogrel/Plavix) and blood thinners such as direct thrombin inhibitors (e.g., dabigatran/Pradaxa), factor Xa inhibitors (fondaparinux/Arixtra, rivaroxaban/Xarelto, apixaban/Eliquis,

edoxaban/Savaysa), low molecular weight heparin (enoxaparin/ Lovenox), unfractionated heparin, bivalirudin, argatroban, warfarin (Coumadin).
- When possible, document the timing of the last dose of these medications.

Management:
EMS personnel should address ABCDEs in accordance with universal pediatric guidelines. Additional initial management steps include:

- Prevent aspiration by positioning the patient with HOB at 30 degrees. Ensure airway patency with suctioning and the use of an oropharyngeal or nasopharyngeal airway as needed.
- Provide supplemental oxygen as needed to maintain oxygen saturation > 94%.
    - Adjust targets in patients with known congenital heart disease who may have different baseline oxygen saturation goals.
- Treat hypotension according to regional pediatric protocols.
- Maintain blood pressure within appropriate age-based parameters, avoiding levels greater than 20% above the 95th percentile for age.[5,12] Contact online medical control if systolic blood pressure remains persistently above this range. The table below provides an example of the upper limit of systolic blood pressure by age.

Age	Goal Systolic Blood Pressure
1-4 years	<130mmHg
5-10 years	<145mmHg
11-17 years	<160mmHg

- Hypoglycemia (blood glucose < 70 mg/dL) should be promptly treated in patients with suspected of acute ischemic stroke.[17] Evidence in adults demonstrates that persistent hyperglycemia during the first 24 hours after stroke is associated with worse outcomes and an increased risk of hemorrhagic transformation. Accordingly, a target blood glucose range of 140-180 mg/dL is recommended.[5]
- To facilitate an expedited stroke workup upon ED arrival, place two peripheral IVs when feasible, provided this does not delay transport.

System Triage:

- The goal on-scene time is 10-15 minutes or less. If the family is not transported with the patient, encourage them to proceed directly to the ED.
- **Refer to Annex A: GETAC Pediatric *Prehospital Stroke Triage Algorithm*** for guidance on pediatric prehospital stroke triage.

Destination Decision-Making for Suspected Pediatric Stroke in Rural, Urban, and Suburban Areas

Age Criteria and Appropriateness for ADULT Stroke Facilities: Adult stroke centers may vary in their capabilities and willingness to evaluate and treat patients under 18 years of age. EMS Medical Directors, in collaboration with stroke facility leadership, should define age-appropriate destination protocols based on regional resources, institutional capabilities, and hospital policies.

Triage Recommendation:

1. Pediatric patient with suspected stroke who is medically stable and last known well **≤ 24 hours**; triage based on the following criteria:

   Age appropriateness for adult stroke facility:

   - For pediatric patient with suspected stroke who are below the age threshold for evaluation at adult stroke centers, **age < appropriate:**
     - Transport suspected stroke patient to the nearest **Pediatric Stroke Destination***
       - **Pediatric Stroke Destination** – EMS Medical Director will identify and recommend local pediatric stroke destinations. These are typically pediatric hospitals capable of caring for pediatric patients with stroke. Please note that there are currently **NO** formal national or statewide guidelines, certifications, accreditations, or recognition systems for Pediatric Stroke Destinations or pediatric stroke center certification.
     - If a Pediatric Stroke Destination is not accessible within ≤ 60 minutes total transport time by air or ground, or if the patient is unstable, transport to the nearest appropriate pediatric facility.
   - For pediatric patients with suspected stroke, **age ≥ appropriate:**
     - Perform a validated stroke severity screening tool to assess for potential large vessel occlusion (LVO), such as the RACE score.[5,18]
     - **If LVO Screening is Positive:**
       - Transport the patient to the nearest adult Comprehensive Stroke Center (CSC/ Level 1) if it is within ≤ 30 minutes from the nearest Pediatric Stroke Destination and within a total transport time of ≤ 60 minutes by air or ground.
       - If a CSC is not available within 30 minutes, transport to the nearest Thrombectomy Capable Stroke Center (TSC/ Level 2) if it is within ≤ 30 minutes from the nearest Pediatric Stroke Destination and within a total transport time of ≤ 60 minutes by air or ground.
       - If neither a CSC nor TSC is available within ≤ 30 minutes, transport to the nearest Pediatric Stroke Destination.
       - If no Pediatric Stroke Destination is available within ≤ 60 minutes, or the patient is unstable, transport to the nearest appropriate pediatric facility.
     - **If LVO Screening Tool Negative:**
       - Transport suspected stroke patients to the nearest Pediatric Stroke Destination.
       - If a Pediatric Stroke Destination is not accessible within a total transport time of ≤ 60 minutes by air or ground, or the patient is

unstable, transport to the nearest pediatric facility or most appropriate facility.

2. Pediatric patient with suspected stroke who is medically stable and last known well **> 24 hours;** triage based on the following criteria:
    - For pediatric patients with suspected stroke, **for all ages:**
        - Transport the patient to the nearest Pediatric Stroke Destination.
        - If a Pediatric Stroke Destination is not accessible within a total transport time of ≤ 60-minute, or the patient is unstable, transport to the nearest appropriate pediatric facility.

    - ❖ **For all ages:** consider air medical transport if total transport time is anticipated to exceed 60 minutes.
    - ❖ **Stroke Prenotification**: Notify the receiving facility as early as possible that a suspected pediatric stroke patient is en route prior to arrival. Early prenotification allows for activation of appropriate resources prior to patient arrival.
        - Prenotification should include: patient age, last known well, time of symptom discovery, current vital signs, stroke screening tool score (if performed), and key symptoms (e.g., weakness on one side, altered mental status, etc.).
    - ❖ **Hand-off Goal**: Target a streamlined EMS-to-ED handoff time of ≤ 120 seconds to facilitate rapid triage and continuation of care.

(Note – This document represents a revision of the 2025 GETAC Pediatric Stroke Triage Recommendations, updated to align with the latest guideline statements and adapted from the North Central Texas Trauma Regional Advisory Council (NCTTRAC) Regional Stroke Plan.)

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PREHOSPITAL ADULT STROKE TRIAGE AND MANAGEMENT

1. **Goal**
   - The GETAC endorsed a triage recommendation to assist pre-hospital providers with the rapid identification, assessment, and triage of all suspected stroke patients in Texas. This recommendation aims to lower barriers to seeking emergency care for stroke and ensure that stroke patients receive care at appropriate facilities promptly.

2. **Purpose**
   - In consultation with emergency medical services (EMS) leaders, local, regional, and state agencies, as well as medical authorities, current national guideline statements, and local experts, the following recommendations seek to ensure that all patients with a known or suspected stroke are rapidly identified, assessed, and triaged as outlined below.[1-15] 9-1-1 call centers and EMS dispatchers are encouraged to use standardized approaches to prehospital stroke assessment, triage, management, and interfacility documentation.
   - **Dispatcher Best Practices:** Consistent with the 2026 AHA/ASA AIS Guideline, EMS dispatchers and 9-1-1 call centers should: (1) use a validated telephone stroke assessment tool (e.g., CPSS, FAST, or MPDS) to identify stroke, reduce on-scene time, and prioritize transport (Class IIa, Level B-NR), as stroke-specific tools yield substantially higher sensitivity than unstructured interviews; (2) dispatch EMS within 90 seconds of the 9-1-1 call and relay all stroke-relevant information (symptom onset/last known well, deficits, patient baseline) to responding units; (3) activate the highest-priority response and, for suspected large vessel occlusion (LVO) where ground transport exceeds regional thresholds, consider early air medical notification; (4) complete stroke-specific dispatcher training with validated recognition scripts; and (5) participate in regional quality improvement (QI) programs that monitor dispatch performance metrics and provide feedback to sustain improvement (Class IIa, Level B-NR).[2]
   - The prehospital acute stroke triage and transport recommendations serve to direct the triage of adult patients (greater than $\geq$ 18 years of age) to the most appropriate facility based on the duration and severity of symptoms. The **GETAC Adult Prehospital Stroke Triage Algorithm** is based on multi-society endorsed guideline statements and recommendations,[1-15] consensus of expert opinion (Vascular Neurologists, Neuroendovascular Surgeons, and Neurosurgeons) based on clinical experience and in consultation with the GETAC council, EMS, EMS Medical Directors, Air Medical, and Stroke Committees. *See* ***Annex A, B, and C: GETAC Adult*** **Prehospital Stroke Triage Algorithm**
   - Regional stakeholders should collaborate to consider local prehospital and health care resources, individual stroke center performance, and geographic considerations to create an optimal stroke system of care (SSOC) and destination protocol to ensure effective and efficient stroke care.[1,4,10,13-15] Ideal destination plans should factor in all available data sources, including traffic patterns, site-specific performance data, and associated clinical outcomes.[1,4,15] EMS agencies should implement destination plans based on time and severity for patients with suspected large vessel occlusion (LVO) within 24 hours of the last known well. These plans should prioritize a nearby comprehensive stroke

center (CSC) over other centers of lower capability when available within acceptable transport times.[4,14-16]

- Consistent with the 2026 AHA/ASA Guideline for the Early Management of Patients with Acute Ischemic Stroke, EMS destination protocols should give priority to **high-performing certified stroke centers** that demonstrate efficient reperfusion delivery and interhospital transfer performance. High-performing certified stroke centers are those that consistently achieve rapid door-to-needle times (e.g., median ≤33 minutes) and short door-in-door-out (DIDO) times for interhospital transfers (e.g., ≤78 minutes, consistent with RACECAT trial benchmarks).[17]Regional stakeholders should use site-specific performance data to define high-performing centers within their systems of care. The 2026 AHA/ASA Guideline further specifies that in areas with well-coordinated stroke systems of care and local hospitals proficient in thrombolysis and secondary interhospital transfer, direct transport of patients with suspected LVO to a distant (e.g., 45–60 min) stroke center certified for thrombectomy compared with transport to a capable local stroke center does not improve 3-month clinical outcomes (Class III: No Benefit). EMS and hospital systems should establish formal agreements and protocols to prioritize interhospital transfer and minimize DIDO times for patients with acute stroke needing a higher level of care (Class I; 2026 AHA/ASA AIS Guideline).[2]
- In response to the perceived need for greater access to thrombectomy, several of the accrediting agencies for stroke centers introduced a fourth level of certification for facilities that can effectively perform endovascular treatment (EVT) but do not meet all the criteria of a CSC, the Thrombectomy Capable Stroke Center (TSC). The American Stroke Association 2019 SSOC Recommendations and the American Heart Association (AHA) Mission: Lifeline Stroke state that the TSC certification is intended for regions of the country that are not readily accessible to CSCs; a CSC is the preferred destination for patients with suspected LVO when within acceptable transport times.[1,4,14] If no CSC is available, a TSC should be the preferred destination for these patients from among all nearby primary stroke centers (PSCs).[1,2,4,14]
- The AHA Lifeline Stroke Committee felt it was best to err on the side of caution and initially set the total transport time from the scene to CSC at 30 minutes for an urban area, 45 minutes in a suburban area, and 60 minutes in a rural area. However, patients eligible for IV thrombolysis (0-4.5 hours from last known well) should be routed to the nearest stroke facility if transport to the nearest CSC or TSC would make them ineligible for thrombolysis due to the additional transport time. In suburban and rural settings, prehospital destination plans and interfacility transport policies should prioritize transporting suspected LVO patients to a facility with well-defined evaluation and stabilization protocols to minimize Door-In-Door-Out (DIDO) times for patients requiring transfer to a higher level of care.[4,10,14] Additional transport time, including air medical transport, may be reasonable in rural communities or where large distances separate stroke centers.[1,4,13,14]

3. SSOC Modification for Metropolitan, Non-Metropolitan, and Frontier Regions

- The following is adapted from the AHA Mission: Lifeline Stroke recommendation for Emergency Medical Services for acute stroke

triage and routing.[1,2,4,13,14] These modifications to transport time thresholds are suggested to help EMS agencies adjust their regional stroke triage protocols in collaboration with local resources and key stakeholders.[4,13,14]

- A Metropolitan SSOC modification is appropriate for a metro region (Urban/RUCA code 1)[4,18] These areas have a high population density (50,000+ inhabitants) and abundant healthcare resources, with EMS access to one or more TSC/CSC within 30 minutes by ground transport.[4,14]
- A Non-Metropolitan SSOC modification is appropriate for large residential communities adjacent to an urban core (Suburban/RUCA codes 2-3).[4,18] These areas generally have a population density closer to the urban threshold. They may have access to nearby community hospitals and 60-minute transport by EMS, either by air or ground.[4,14] Patients with suspected LVO should be routed directly to a CSC if the maximum transport time from the scene to the CSC does not exceed 45 minutes. If no CSC is within 45 minutes, then EMS should go directly to a TSC if the maximum total transport time from the scene to the TSC does not exceed 45 minutes. If no TSC or CSC is available within 45 minutes of the total travel time, EMS should go to the nearest acute stroke-ready hospital (ASRH) or PSC.[4,14]
- A Frontier SSOC modification is appropriate for a small or non-metropolitan region (Rural/RUCA codes 4-10).[4,18] These areas generally have low population density (<50,000 inhabitants), limited local general healthcare resources, few nearby ASRH or PSC, and often no TSC/CSC within 60 minutes ground transport, although there may be one within 60 minutes by air.[4,14] Patients with suspected LVO should be routed directly to a CSC if the maximum total transport time from the scene to the CSC does not exceed 60 minutes.[4,14] If no CSC is within 60 minutes, then EMS should go directly to a TSC if the maximum total transport time from the scene to the TSC does not exceed 60 minutes.[4,14] Consider air medical transport if no certified stroke center is within 60 minutes by ground. If air transfer is unavailable, transfer the patient to the nearest hospital per the regional stroke plan.[4,14]

- The COVID-19 pandemic further emphasized the need for flexible prehospital triage and interfacility transport adaptation in response to local and regional factors. Preferential routing of suspected LVO patients to centers with thrombectomy capability may be even more important when in-hospital and interfacility delays are exacerbated, as in conditions such as the COVID-19 pandemic.[19]

- **Role of Mobile Stroke Units (MSUs):** In regions where Mobile Stroke Units (MSUs) are available, their use over conventional EMS is recommended (Class I, Level A; 2026 AHA/ASA AIS Guideline) for the transport and management of thrombolytic-eligible patients to ensure the fastest achievable onset-to-treatment time and improve functional outcomes.[2] MSUs are specialized ambulances staffed by interdisciplinary teams (including paramedics, nurses, and physicians or telemedicine consultants) equipped to perform point-of-care neuroimaging, initiate intravenous thrombolysis in the field, and provide comprehensive prehospital notification to receiving stroke teams. When available, MSUs can also identify and triage EVT-eligible patients (Class IIa, Level B-NR; 2026

AHA/ASA AIS Guideline) to the appropriate thrombectomy-capable facility with advanced activation of receiving stroke and interventional teams. Regional EMS systems and stroke networks should integrate MSU protocols into their destination plans where operationally feasible.

4. Prehospital Triage of Stroke in Adult Patients

- **Basic Level**:
  - Assess and support ABCEs according to UNIVERSAL CARE – ADULT:
    - **A (Airway)**: Airway support and ventilator assistance are recommended for patients with acute stroke who have decreased consciousness or a compromised airway. Suctioning and oropharyngeal or nasopharyngeal airway as needed to ensure airway patency.
    - **B (Breathing)**: Supplemental oxygen should be provided to maintain oxygen saturation >94% (continuous monitoring).[2]
    - **C (Circulation)**: Evaluate, document, and treat signs/symptoms of shock according to the Shock Clinical Practice Guidelines (CPG).
    - **D (Disability)**: Assess and document GCS, pupillary size, and reactivity.
    - **E (Exposure/Environmental)**: Assess for evidence of traumatic injury, especially head injury.
- **Positioning and Stabilization**:
  - Place the patient in a supine position, with the head of the bed elevated at 30 degrees, if the patient can tolerate.[2,10] Keeping the patient at 30 degrees can improve blood flow to the brain[20,21] and is recommended if the patient can tolerate.[2,10] Avoid lying the patient flat unless an LVO is documented,[22,23] and the patient is not at risk for elevated intracranial pressure or herniation.[21]
  - Ensure airway patency with suctioning and oropharyngeal airway or nasopharyngeal airway as needed.
  - Cardiac monitoring during transport is recommended. Obtaining an EKG during workup is acceptable as long as it does not delay transport to the appropriate stroke facility.[2]
  - Treat hypotension. Evaluate, document, and treat signs/symptoms of shock according to the **Shock CPG**.
  - If hypoglycemia is present (POC glucose <60 mg/gL),[2] treat according to **Diabetic Emergencies CPG**. Hyperglycemia in acute ischemic stroke is associated with worse clinical outcomes,[24,25] including greater infarct growth[26,27] and hemorrhagic infarct conversion.[28,29]
  - If there is Seizure activity, treat according to the **Seizure CPG**.
- **Management**:
  - EMS personnel should begin the initial management of stroke in the field as outlined in this document.
  - Provide supplemental oxygen if needed to keep oxygen saturation >94%.[2]
  - Treatment of hypertension is **NOT** recommended unless blood pressure is >220/120 mmHg.[2]
  - Per the 2026 AHA/ASA AIS Guideline, both **alteplase** (0.9 mg/kg IV, max 90 mg) and **tenecteplase** (0.25 mg/kg IV, max 25 mg) are now recommended (Class I) for eligible patients within the 4.5-hour

thrombolytic window.[2] EMS should document and communicate the patient's weight to the receiving facility to facilitate rapid dosing.
    - Avoid dextrose-containing fluids in non-hypoglycemic patients.[2]
    - Perform and document a POC Glucose analysis and treat according to the ASA 2026 Guidelines for Management of Acute Ischemic Stroke.[2]
        - Hypoglycemia (blood glucose <60 mg/dL) should be treated in patients suspected of acute ischemic stroke.[2]
    - To facilitate expedited stroke workup in the ED, place at least one 18 or 20-gauge IV in the antecubital fossa or forearm (right preferred).
    - To facilitate the fastest Door-to-Needle and stroke care, collect blood samples to provide the receiving facility, as long as it does not delay the transfer.
- **Assessment**:
    - **History** - Interview patients, family members, and other witnesses to **determine symptoms**, **time of symptom discovery**, and **last known well** or last time patient without symptoms:
        - Obtain a mobile number for the next of kin and witnesses.
        - **NOTE**: For "wake-up strokes," the time documented is the time the patient was last known well, not the time the patient was found.
        - **NOTE**: Sudden onset of any of the following suggests the possibility of acute stroke:
            - Numbness or weakness of the face, arm, and/or leg (especially on one side of the body)
            - Confusion
            - Trouble speaking or understanding language
            - Double vision, trouble seeing in one or both eyes
            - Trouble walking
            - Dizziness
            - Loss of balance or coordination
            - Sudden onset of severe headache with no known cause (suggests hemorrhagic stroke)
            - Any asymmetry of the neurological exam
    - **Additional History**:
        - Obtain the patient's history, including co-morbid conditions, past medical history, recent surgeries, prior strokes, and allergies (iodinated contrast).
        - Items to report: seizure at onset of stroke symptoms, head trauma, history of recent surgeries, history of bleeding problems, history of recent stroke, signs of possible brain hemorrhage [severe headache of sudden onset, nausea/vomiting with headache or loss of consciousness (LOC)].
        - Obtain dates for **recent events**: surgery, stroke, bleed, or trauma.
        - Additional history: ask if symptoms are associated with a severe headache of sudden onset, loss of consciousness, nausea/vomiting, or the worst headache of their life.
        - Be alert to common stroke mimics*.
        - Determine if the patient has a substantial pre-existing disability (e.g., need for nursing home care or unable to walk

independently).
        - Obtain a list of all medications including: antiplatelet agents (e.g., aspirin, clopidogrel [Plavix]) and blood thinners (direct thrombin inhibitors [dabigatran/Pradaxa], factor Xa inhibitors [fondaparinux/Arixtra, rivaroxaban/Xarelto, apixaban/Eliquis, edoxaban/Savaysa], low molecular weight heparin [enoxaparin/ Lovenox], unfractionated heparin, bivalirudin, argatroban, or warfarin [Coumadin]).
            - If possible, record when the patient took the last dose.
        - Device/implant history (e.g., left ventricular assist device, pacemaker, valve replacement).
- **Examination**:
    - Assess and record blood pressure, rate, rhythm, respiratory rate, and oxygen saturation.
    - Apply a validated and standardized instrument for stroke screening, such as: FAST (Face, Arm, Speech, Test), Balance Eyes Face Arm Speech Time Tool (BEFAST), Los Angeles Prehospital Stroke Screen, Melbourne Ambulance Stroke Screen, or Cincinnati Prehospital Stroke Scale.[1,2,4,10,30-37]
    - In prehospital patients who screen positive for suspected stroke, apply a standard prehospital stroke severity assessment tool such as the Cincinnati Stroke Triage Assessment Tool (CSTAT), Field Assessment Stroke Triage for Emergency Destination (FAST-ED), Rapid Arterial Occlusion Evaluation Scale (RACE), Prehospital Acute Stroke Severity (PASS), Gaze-Face-Arm-Speech-Time (G-FAST), Conveniently-Grasped Field Assessment Stroke Triage (CG-FAST), Vision, Aphasia, Neglect (VAN) Assessment, Austrian Prehospital Stroke Scale, and Ventura Emergent LVO Score.[1,2,4,10,30,34,35,37-42]
- **System Triage**:
    - The goal for on-scene time is 10-15 minutes or less. If the family is not transported with the patient, encourage them to go directly to the ED.
    - See **Annex A, B, and C: Adult *Prehospital Stroke Triage Algorithm*** forthe adult prehospital stroke triage algorithm.
    - **Call stroke alert** and pre-notify the receiving facility that a suspected stroke patient is en route so that the appropriate resources may be mobilized before the patient's arrival.[10,43]
    - **Pre-notification** should include the patient's name, age, LKW, time of symptom discovery, vitals, blood glucose, stroke screen and severity score, blood thinner history and last dose, sudden severe headache or loss of consciousness with symptom onset, and the phone number for the next of kin.[10]
    - Goal: 30 seconds for EMS to ED triage nursehand-off.
    - **Bypass Exclusions**:
        - If severe or life-threatening trauma is suspected in addition to stroke, transfer to the appropriate level trauma center.
        - Patients under hospice care or with Medical Orders for Scope of Treatment (MOST) that outline no emergency measures should go to the nearest appropriate hospital.
    - Common ischemic **stroke mimics**: alcoholic intoxication, cerebral infections, drug overdose, hemorrhagic stroke, hypoglycemia, hyperglycemia, metabolic disorders, atypical migraines, neuropathies

(e.g., Bell’s palsy), seizure, post-ictal state, and tumors.

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Pediatric Stroke Tip Sheet: Initial ED Recommendations for Receiving Facilities

Audience: Emergency Departments receiving children with *suspected* stroke (Primary Stroke Centers, freestanding EDs, Comprehensive Stroke Centers)

Purpose: Provide a practical, early action orientation for the first 30–60 minutes of care when a child presents with *suspected* stroke. This document emphasizes early recognition, stabilization, imaging, consultation, and timely transfer.

Important: Pediatric stroke cannot be definitively diagnosed in the field and is rare. This tip sheet is not a guideline, mandate, or standard of care. Local policies, resources, and clinician judgment apply.

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1) When to Suspect Pediatric Stroke

Maintain stroke on the differential when a child has sudden onset neurologic symptoms, including:

- Focal weakness or numbness (face/arm/leg)
- Speech or language difficulty
- Vision loss or diplopia
- Ataxia and imbalance
- Vertigo in combination with other symptoms
- New seizure with persistent focal deficit
- Altered mental status with lateralizing signs
- Severe headache with neurologic change

Note: Stroke mimics are common (>50%) in children, but many stroke mimics are neurologic emergencies.[1–3] Early stroke activation is appropriate when concern exists.

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2) Immediate Actions on Arrival (First 10–15 Minutes)

Focus on medical stabilization and timely transfer:

- Activate the local stroke process or equivalent rapid response
- Support airway, breathing, circulation; provide oxygen as needed
- Check glucose promptly
- Establish IV access (do not delay imaging/transfer)
- Position head of bed ~30° if tolerated
- Document Last Known Well (LKW) clearly (for wake-up events, LKW is last time at baseline)
- Brief neurologic assessment (e.g., BE-FAST; severity screen if used locally)

- Avoid aggressive blood pressure lowering in the acute setting unless medically indicated for another reason.[4]

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3) Imaging: What Is Reasonable

Non-contrast CT head is appropriate and widely available and is used to identify intracranial hemorrhage and large, established infarcts.

CTA head/neck is reasonable when ischemic stroke is suspected, and can diagnose large artery occlusions in children.

MRI may be preferred at pediatric centers when readily available without delay, **but should not delay transfer.**

Vascular imaging should be obtained when feasible without delaying transfer, particularly when large artery occlusion is suspected. Avoid prolonged or sequential imaging that delays consultation or transfer.

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4) Early Decision-Making: Stabilize and Move Forward

When there is strong clinical suspicion for pediatric stroke, many Primary Stroke Centers and freestanding EDs may not have rapid access to immediate pediatric neurology consultation. In these settings, the priority should be early stabilization and timely transfer to a facility with pediatric stroke expertise.

- Initiate local stroke processes and complete initial stabilization and imaging
- Begin transfer planning early rather than waiting for definitive diagnosis
- Consultation with a pediatric neurologist or regional pediatric stroke-capable center is encouraged when readily available, but should not delay transfer
- Immediate specialty phone consultation may not be feasible in all locations. When in doubt, early transfer is appropriate and preferred
- Transfer planning should not wait for MRI confirmation in cases of suspected pediatric stroke

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5) Transfer: When to Prioritize Early Transfer

Early transfer should be prioritized when any of the following apply:

- Strong suspicion for stroke with limited local pediatric expertise
- Need for pediatric neurology, neurosurgery, or pediatric ICU monitoring
- Consideration of endovascular evaluation, advanced stroke therapies, or vascular imaging

- Transfer planning should occur in parallel with stabilization and imaging

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6) Where to Transfer

There is no formal national or statewide certification system for pediatric stroke centers. Facilities most appropriate to receive children with suspected or confirmed stroke should be determined locally based on available resources, expertise, and established regional plans.

In many counties—particularly near large metropolitan areas—the most appropriate destination will be a tertiary care children's hospital with pediatric neurology, neurosurgery, hematology and pediatric intensive care capabilities.

Some Comprehensive Stroke Centers (CSCs) may be willing to accept older adolescents (e.g., age ≥16 years), but this varies by institution and should be determined at the local or regional level.

In general:

- Transfer to the nearest large children's hospital is often the best course of action for suspected stroke in younger children
- Consider CSC transfer for older adolescents, particularly when a large artery occlusion is suspected and local agreements support this pathway

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7) Advanced Stroke Therapies: Key Principles

Endovascular thrombectomy may benefit carefully selected children and adolescents with large artery occlusion and disabling stroke.[5–8] Evaluation and treatment should occur at centers with appropriate pediatric and neurointerventional expertise. Transfer to comprehensive stroke centers willing and able to treat pediatric patients may be reasonable for older children with confirmed large artery occlusion.

Per 2026 AHA guidelines,[4] intravenous thrombolysis *may be considered* for children and adolescents younger than 18 years with confirmed arterial ischemic stroke, disabling neurologic deficits, and treatment initiation within 4.5 hours of last known well. When considered, thrombolytic therapy should be given by, or in consultation with, clinicians with expertise managing pediatric stroke.

Decisions regarding advanced therapies should not delay stabilization or transfer to an appropriate receiving facility.

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8) Key Reminders

- Pediatric stroke is rare but time-sensitive
- Early recognition can improve outcomes
- Stabilize and transfer. Do not wait for certainty.

Disclaimer

This document reflects expert consensus and educational guidance to support early stabilization and decision-making for children with suspected stroke. It does not establish standards of care, define pediatric stroke centers, or supersede local policies. Practices should be adapted to patient needs, institutional resources, and clinician judgment.

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