

Suspected Acute Ischemic Stroke

Acute ischemic stroke (AIS) is a **time-critical** illness. Determine and communicate **Last Known Well Time (LKWT), time of symptom discovery, blood glucose, Cincinnati Prehospital Stroke Screen (CPSS) result and Field Assessment Stroke Triage for Emergency Destination (FAST-ED) Score** (see below) to the Destination Hospital for all suspected AIS patients.

Many patients with AIS may benefit from **fibrinolytic therapy** if initiated **within 4.5 hours of LKWT**. In addition, whether they receive **fibrinolytic therapy** or not, patients found to have a **large vessel occlusion (LVO)** may benefit from **mechanical thrombectomy** if initiated **within 6 hours of LKWT**. **Some** patients who present with suspected acute ischemic stroke **between 6 and 24 hours after LKWT** may also benefit from mechanical thrombectomy.

Fibrinolytic therapy is available at **all Stroke Centers**, and most non-certified hospitals. Mechanical thrombectomy is only available at **selected Stroke Centers**. AIS patients who present at hospitals where it is not available may undergo interfacility transport to a **"Thrombectomy-Capable" Stroke Center** or **"Comprehensive" Stroke Center** if they have a thrombectomy eligible LVO.

REGIONAL HOSPITAL STROKE CERTIFICATIONS (per The Joint Commission (August 2020)):
 MHSB is an **Advanced Thrombectomy-Capable Stroke Center (TSC)**.
 MMC is an **Advanced Primary Stroke Center (PSC)**.
 Beacon Granger Hospital has **no** Stroke Center certification.
 Community Hospital of Bremen has **no** Stroke Center certification.
 Elkhart General Hospital is an **Advanced Primary Stroke Center (PSC)**.
 Lakeland Hospital, Niles (MI) is an **Advanced Primary Stroke Center (PSC)**.
 LaPorte Hospital is an **Advanced Primary Stroke Center (PSC)**.
 Plymouth Medical Center is an **Acute Stroke Ready Hospital Stroke Center (ASRH)**.

The most important historical data in any patient with a possible acute ischemic stroke is LKWT. LKWT for a patient who wakes up with symptoms ("wake-up stroke") is the time the patient last went to sleep **without** symptoms. LKWT for a patient with suspected AIS who cannot communicate is the last time the patient was known to be without symptoms.

Perform evaluation and interventions **en route** to the Destination Hospital if feasible. Do **not** delay transport to initiate venous access except in life-threatening case-specific circumstances.

If the patient may be a candidate for fibrinolytic therapy or mechanical thrombectomy, contact the Destination Hospital **immediately** to activate a 'Code Stroke'. Consult with the OMCP if necessary and feasible. Consider emergent transport if appropriate (see below). **Time = Brain**

1. **R** Manage the airway; titrate supplemental O₂ to maintain SaO₂ = 94-96%, **not higher**.
2. **R** Obtain a rapid, focused history, concentrating on:
 - **LKWT**. Also note the **time that symptoms were discovered**, which may, or may not, be the same as LKWT. **If possible, obtain the name/phone number of the closest available relative or, if none is available, any bystander who can assist hospital personnel in contacting the patient's family.**
 - Current reported neurological deficits.
 - Whether symptoms are progressing, improving, or staying the same.
 - Any history of AIS, intracerebral hemorrhage, subarachnoid hemorrhage, or neurological deficit due to any cause.
 - Any history of seizures, or a seizure in association with the current event.

CAUTION: The postictal phase of a seizure can present with unilateral weakness or paralysis, called Todd's Paralysis, mimicking an AIS, and can last for up to 48 hours. Gathering information regarding the events leading up to an AIS-like presentation is critical.

- Surgery within the last three months.
- All medications the patient is currently taking, especially **anticoagulants**.

CAUTION: Anticoagulant and/or antiplatelet agent use does not automatically make patients ineligible for fibrinolytic therapy or mechanical thrombectomy.

3. **R** Perform a rapid neurological assessment, focusing on:
 - Level of alertness and orientation.
 - Cranial nerve deficits—especially slurred, garbled, or inappropriate speech, or facial droop.
 - Extremity weakness (paresis) or paralysis.
 - Visual symptoms, including diplopia, blurred vision, and abnormal eye movement.
4. **A** Measure blood glucose (see Acute Non-Traumatic Altered Level of Consciousness).
5. **R** Perform a **Cincinnati Prehospital Stroke Screen (CPSS)**:

The Cincinnati Prehospital Stroke Scale is helpful but **does not rule out stroke**.



Cincinnati Prehospital Stroke Scale (If any test is abnormal, stroke probability ~ 70%)	
Facial Droop (have the patient smile or show his/her teeth)	Normal: Both sides of the face move equally; there is no significant asymmetry
	Abnormal: One side of the face does not move as well as the other side
Arm Drift (patient closes eyes and extends both arms straight out, palms up, for 10 sec)	Normal: Both arms move the same or neither arm moves at all
	Abnormal: One arm does not move at all or one arm drifts down compared to the other
Abnormal Speech (have the patient say, "you can't teach an old dog new tricks")	Normal: Patient uses correct words with no slurring of speech
	Abnormal: Patient slurs words, uses the wrong words, or is unable to speak at all

6. **R** If AIS is suspected based on EMS evaluation and CPSS, determine **LKWT**. Determine a specific time (e.g., 2105), **not** a "relative time" (e.g., "45 min before calling EMS").
7. **R** Use the **FAST-ED score** to determine if an **LVO** is suspected.

FAST-ED Score \geq 4: LVO suspected
FAST-ED Score $<$ 4: LVO not suspected

8. **E** See Scenario-Specific Diversion. Determine the Destination Hospital based on the patient’s location, LKWT, potential eligibility for fibrinolytic therapy, and estimated time to transport:

Destination Hospital Determination for Suspected Acute Ischemic Stroke	FAST-ED Score \geq 4	FAST-ED Score $<$ 4
LKWT $<$ 24 hours prior to EMS evaluation	<p style="color: red;">Transport to MHSB. Emergent transport at EMS discretion if LKWT $<$ 6 hours prior to EMS evaluation.</p> <p><i>However, if the extra time necessary to transport to MHSB will disqualify the patient from fibrinolytic therapy (must be initiated within 4.5 hours of LKWT), transport to closest hospital capable of administering fibrinolytic therapy. OMCP</i></p>	<p style="color: red;">If LKWT $<$ 4.5 hours, transport to closest hospital capable of administering fibrinolytic therapy. Emergent transport at EMS discretion if LKWT $<$ 4.5 hours prior to EMS evaluation. <i>Otherwise:</i></p> <p>Transport to closest certified Stroke Center (ASRH, PSC, or TSC).</p>
LKWT \geq 24 hours prior to EMS assessment	Transport to closest certified Stroke Center (ASRH, PSC, or TSC).	Transport to closest certified Stroke Center (ASRH, PSC, or TSC).

9. **P** Place the patient on a cardiac monitor.
 10. **E** If indicated, place the patient on a pulse oximeter.
 11. **A** Initiate an intravenous reseau, or an infusion if appropriate.

*Unless the patient is a diabetic, do not administer dextrose without Online Medical Consultation. **OMCP***

12. **R** Monitor vital signs every five (5) minutes.
 13. **R** Upon arrival at the Destination Hospital, ask for an **EMS timeout** and give a verbal report directly to an emergency physician or emergency nurse.

Key Considerations
<ul style="list-style-type: none"> MHSB is the only local hospital where mechanical thrombectomy is currently available. Most patients with LKWT $<$ 24 hours and FAST-ED \geq 4 will be transported to MHSB. There are exceptions (see above). Any case-specific questions regarding the appropriate Destination Hospital should be referred to Online Medical Consultation. OMCP Ischemic stroke symptoms may be subtle. Assess the patient carefully. Hypoglycemia can mimic stroke. Check the blood sugar. Administer dextrose to a known diabetic with hypoglycemia; otherwise, only with Online Medical Consultation. OMCP Left hemispheric ischemic stroke is more likely to cause difficulty saying the correct words, a condition known as aphasia. Patients with aphasia may still understand everything that is being said. Fibrinolytic therapy is never contraindicated solely because of patient age. Time = Brain

Effective: April 2, 2007 Revised: **April 1, 2018** Revised: **October 1, 2020**