



Washington State EMS Prehospital Stroke Triage Tool

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Presentation Overview

How did we get here? History & background of Washington's Emergency Cardiac and Stroke System

CDC Paul Coverdell grant

The triage stroke tool ~ Initial, revised, and the need for change

How Flex funds support the program

Strengths and areas of opportunity

Stroke and Washington State

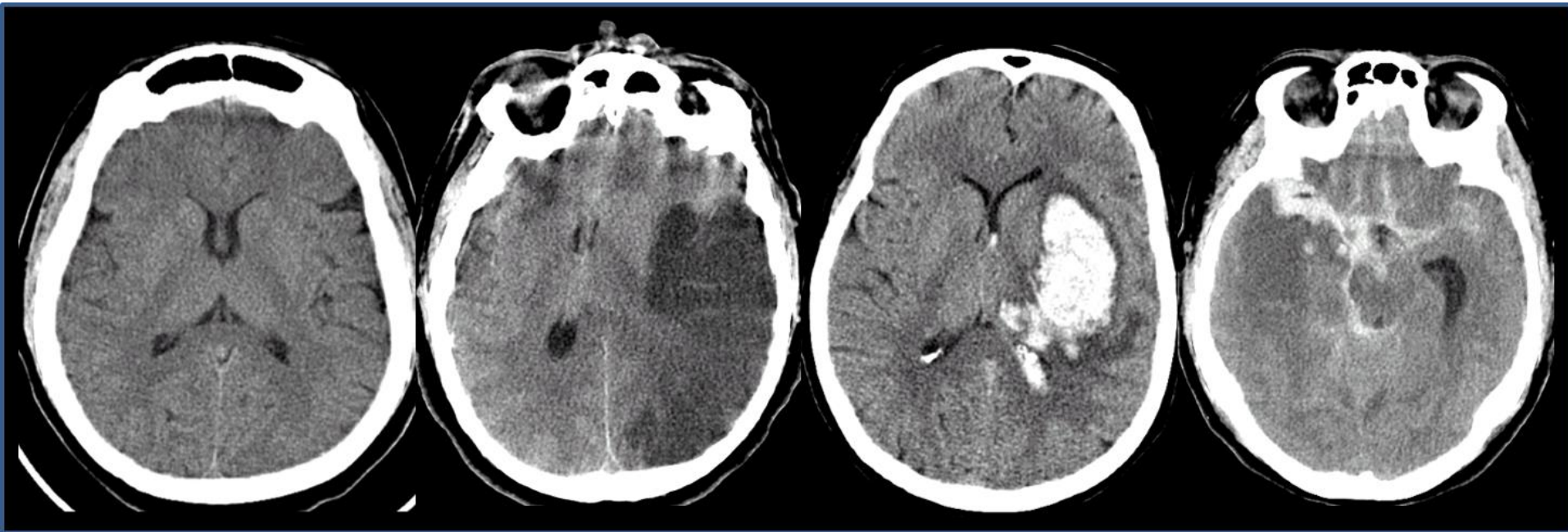
Washington's Emergency Cardiac and Stroke System

- 1999 EMS trauma directed work group to assess cardiac and stroke care
- 2002 First ECS report showing variations in care; no funding
- 2005 CDC Heart Disease and Stroke Prevention grant to improve emergency response to heart attack and stroke
- 2008 Second ECS report
- 2010 ECS Legislation; no funding
- 2011-2013 system/stroke triage tool implementation
- 2015 CDC Coverdell grant received (through June 2020)
- 2016-2017 stroke triage tool revised, implementation in process

WHO Stroke Definition

- A neurological impairment or deficit of
- Sudden onset, and
- Lasting more than 24 hours (or leading to death)
- Of presumed vascular origin
- Three major types of stroke
 - Ischemic Stroke
 - Intracerebral Hemorrhage
 - Subarachnoid Hemorrhage

3 Major Types of Stroke



Normal

Ischemic
Stroke

Intraparenchymal
Hemorrhage

Subarachnoid
Hemorrhage

Stroke Facts

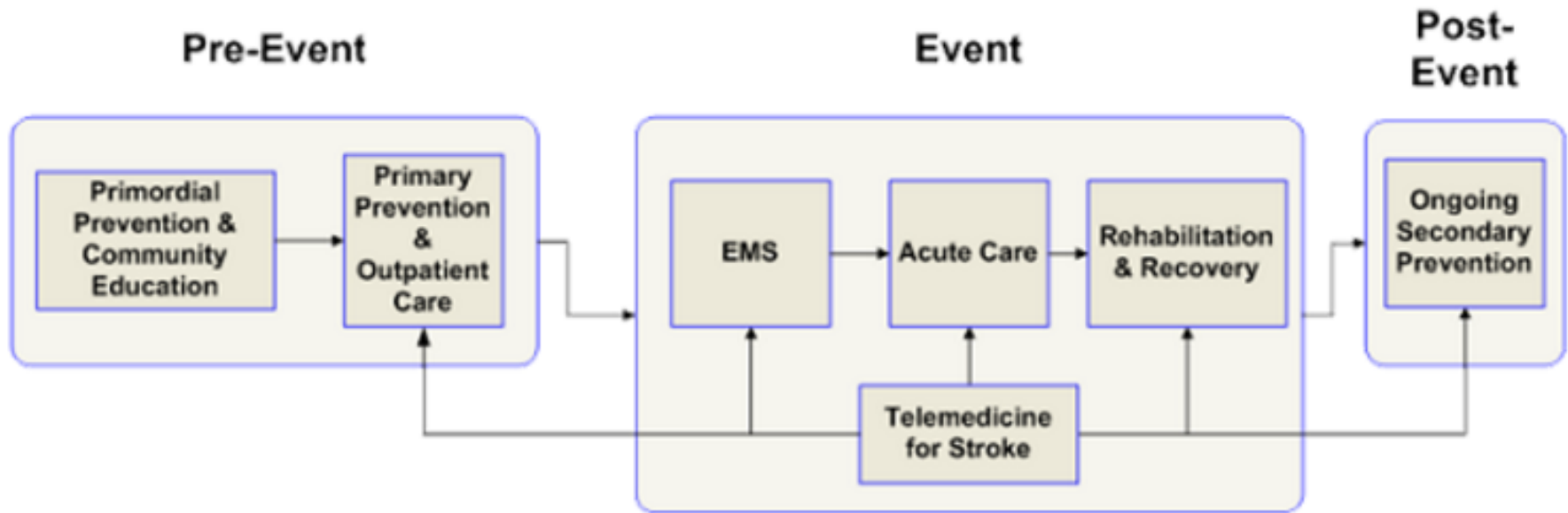
- > 795,000 people have a stroke each year in the US
- About 25% die at the time of the stroke event or soon after.
- 15%–30% remain permanently disabled.
- Total annual stroke costs to the nation are about \$38.6 billion.
- Transport of stroke patients to the hospital results in faster treatment, yet > 1/3 of stroke patients do not call 9-1-1 and use EMS to get to the hospital.
- Gaps remain in the quality of care provided to acute stroke patients.

http://www.cdc.gov/dhdsp/programs/stroke_registry.htm

Acute Stroke Treatment Advances

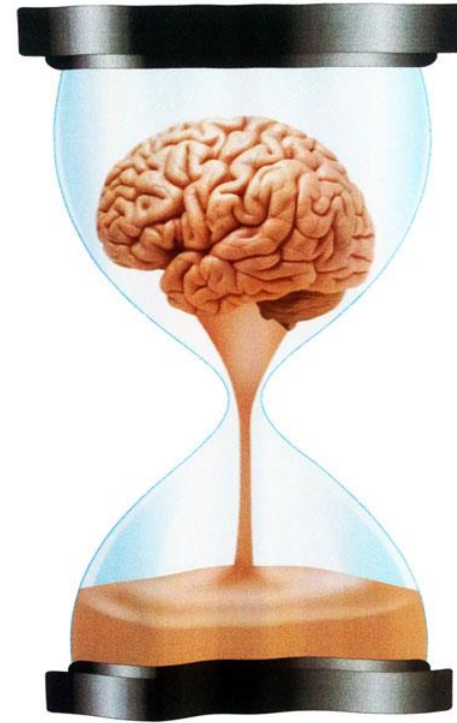
- 1990s
 - tPA shown effective for ischemic stroke
 - Narrow time window (3 hours then in 2008 4.5 hours)
- 2000s
 - Stroke Units decrease mortality, improve function
 - Hemispherectomy for large strokes
 - TJC begins to certify Stroke Centers
- 2015
 - Endovascular therapy to remove clots
 - 6 hour time window

The Components of a Stroke System of Care¹



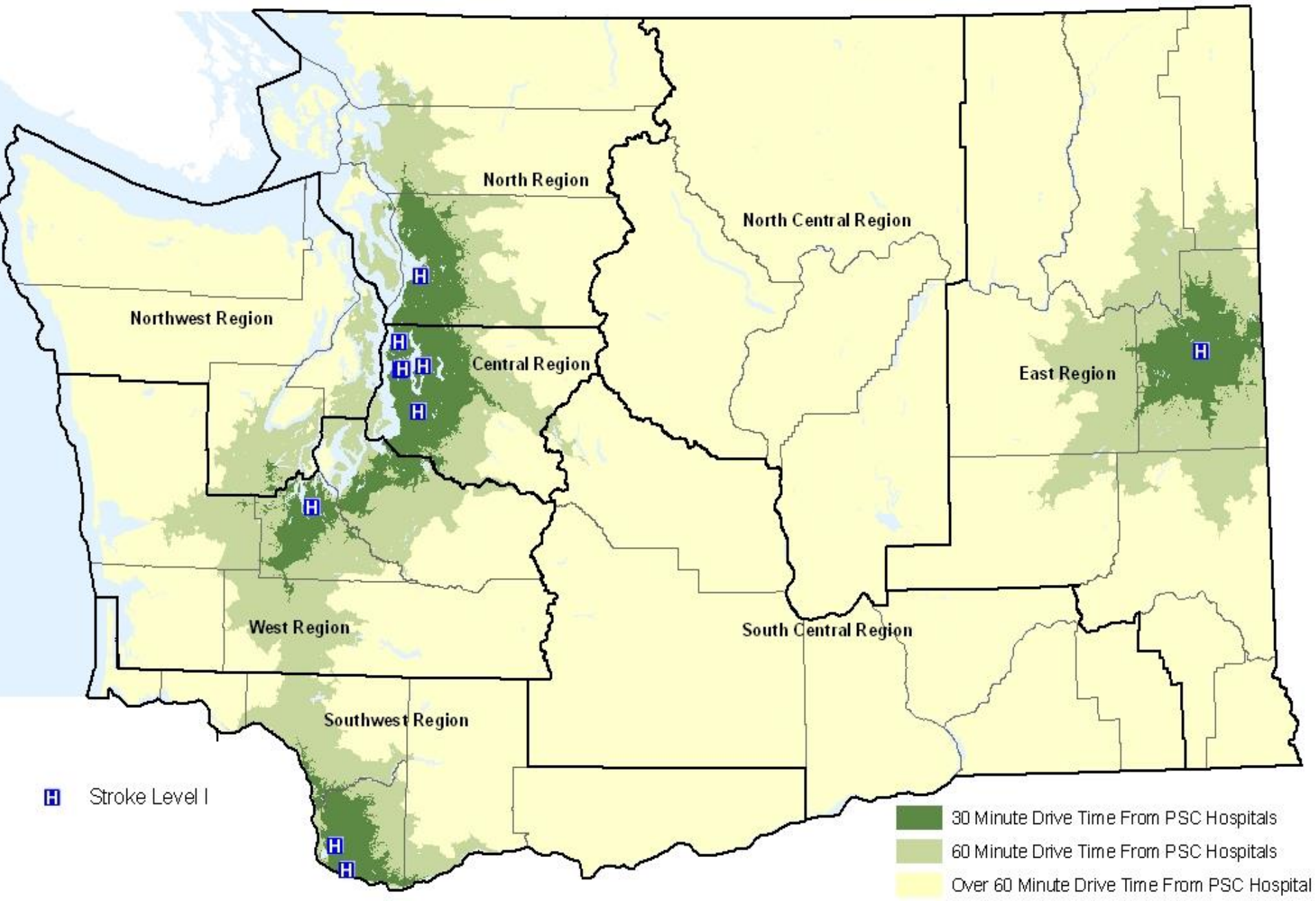
Goals

- Rapid workup
- Rapid decision making
- Rapid treatment
- Minutes matter!

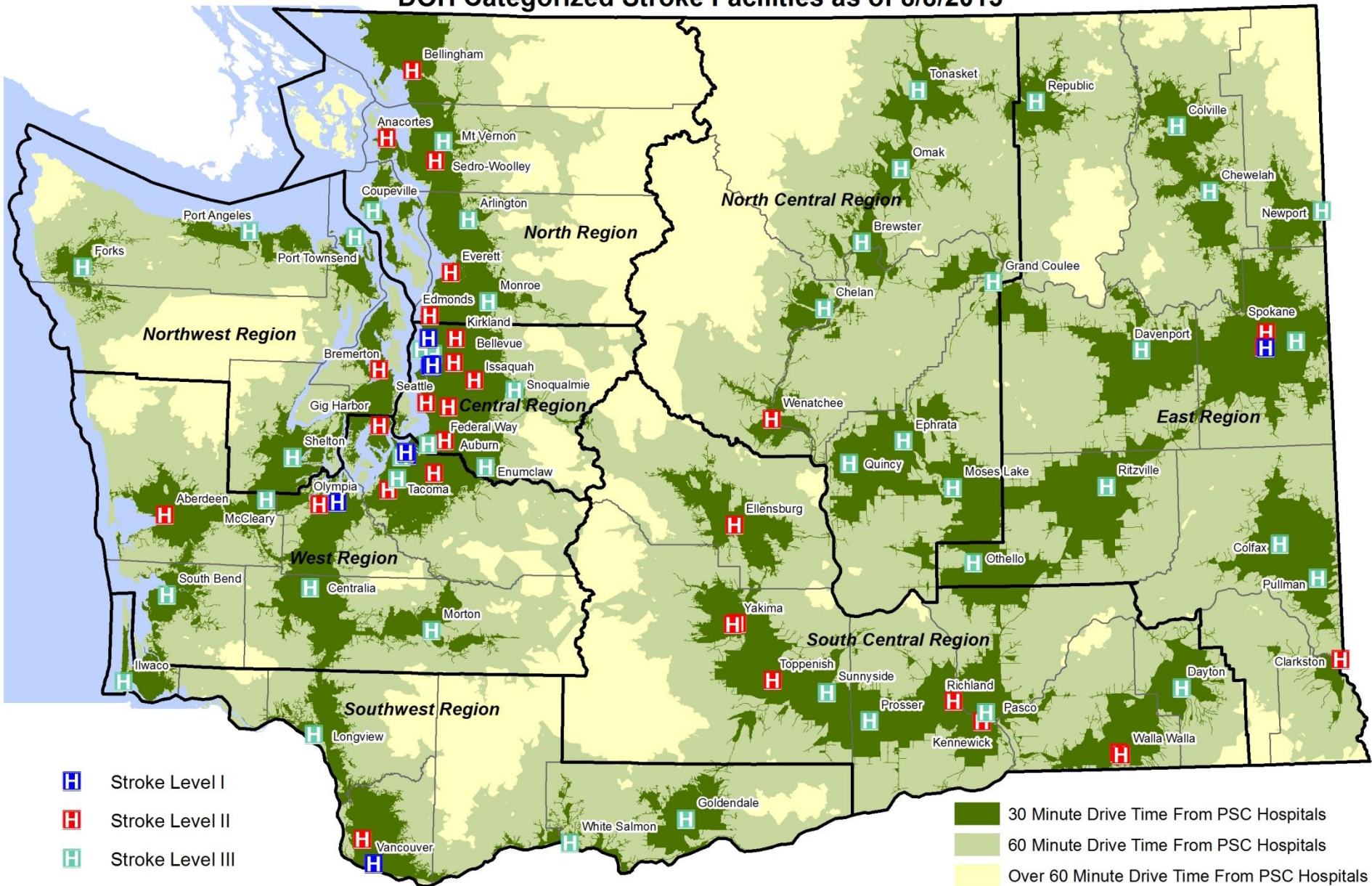


**Stroke : Time lost is
brain lost**

STROKE CENTERS AND COVERAGE AREA 2007



DOH Categorized Stroke Facilities as of 8/8/2013



SSHB 2396 – Key Points

- It is the intent of the legislature to support efforts to improve emergency cardiac and stroke care in Washington through an evidence-based coordinated system of care
- By January 1, 2011, the department shall endeavor to enhance and support... through:
 - Encouraging hospitals to voluntarily self-identify cardiac and stroke capabilities/levels
 - Adopting cardiac and stroke prehospital patient care protocols, patient care procedures, and triage tools, consistent with the guiding principles and recommendations of the emergency cardiac and stroke work group report



Quick Overview of the Cooperative Agreement with the CDC

Paul Coverdell

National Acute Stroke Prevention

DP15-CDC-1514

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A short history on Coverdell

- US Senator from Georgia
- Died from a cerebral hemorrhage in 2000.
- 2001: Congress directs CDC to implement state-based registries to measure and track acute stroke care to improve quality.
- Congress named the Paul Coverdell National Acute Stroke Registry (PCNASR) in memory of Senator Coverdell.

Paul Coverdell



High Level Goals

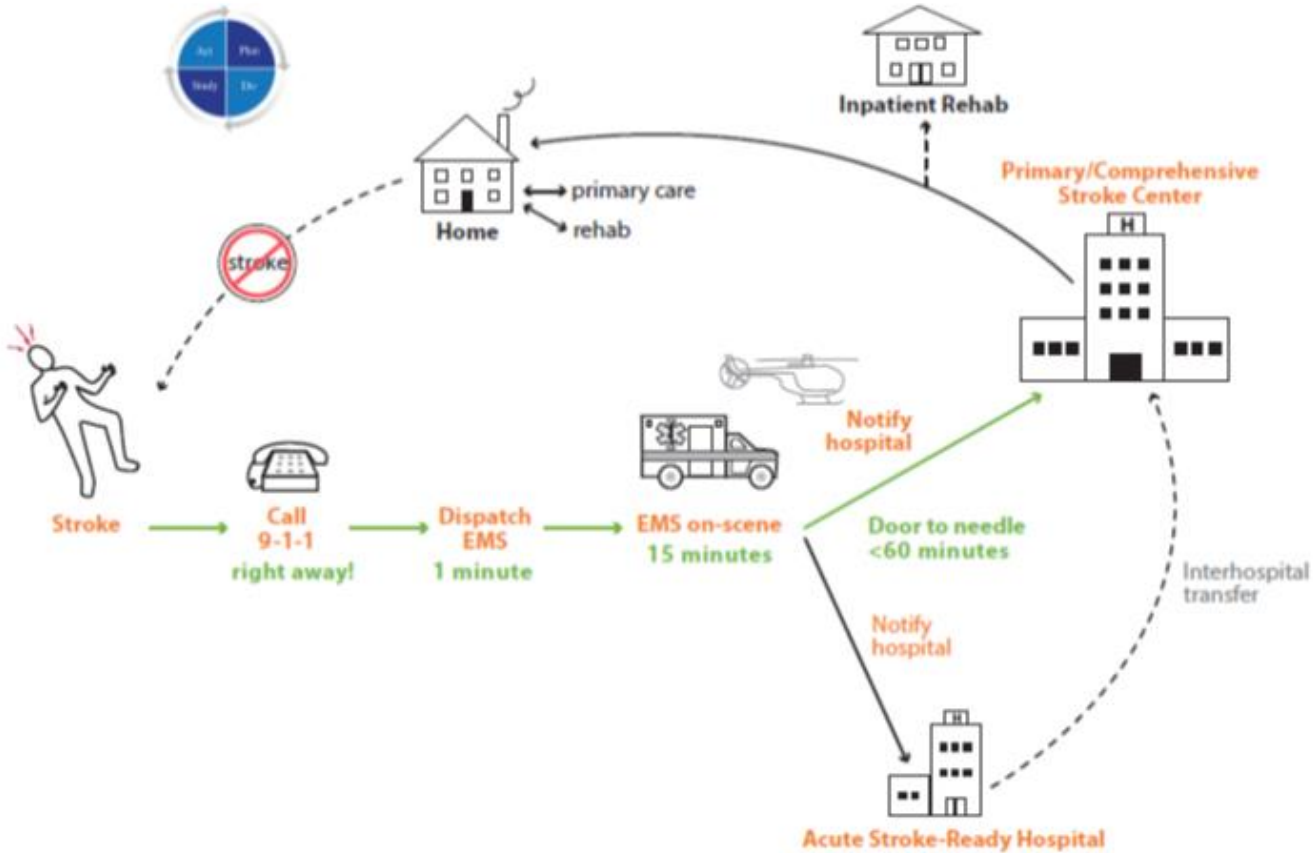
GOAL: Reduce time to treatment and improve outcomes.

MAJOR STRATEGIES:

- Increase the public's recognition of signs and symptoms
- Standard EMS stroke assessment, triage based on result, and early notification to hospital
- Rapid, evidence-based treatment at hospitals
- Improved post-acute care by increasing the use of rehab and improving transitions back to home and primary care.
- Quality improvement based on meaningful, standardized data through a registry that links EMS, hospital, and post-acute data so we can measure performance across the system and use it for process and outcome improvement.

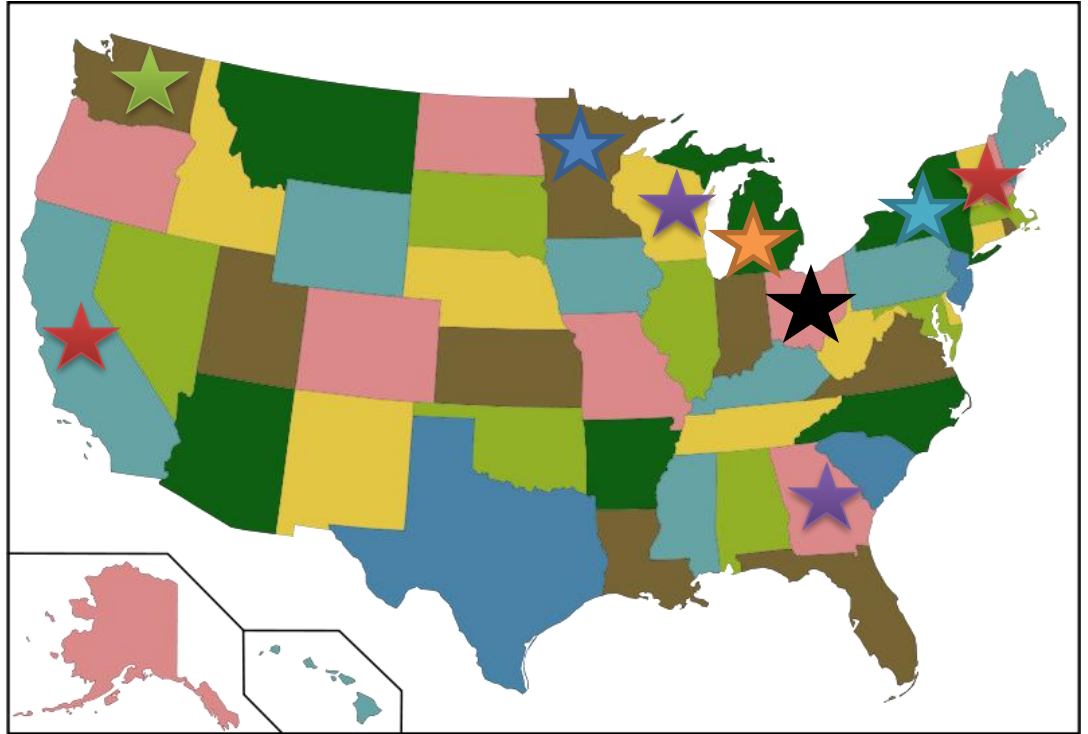
Washington Coverdell Stroke Program 2015-2020

GOAL: Better stroke outcomes by increasing stroke awareness, improving care along the continuum, and measuring performance to continuously improve quality of care.



Our Peer States

- California
- Georgia
- Massachusetts
- Michigan
- Minnesota
- New York
- Ohio
- Washington
- Wisconsin

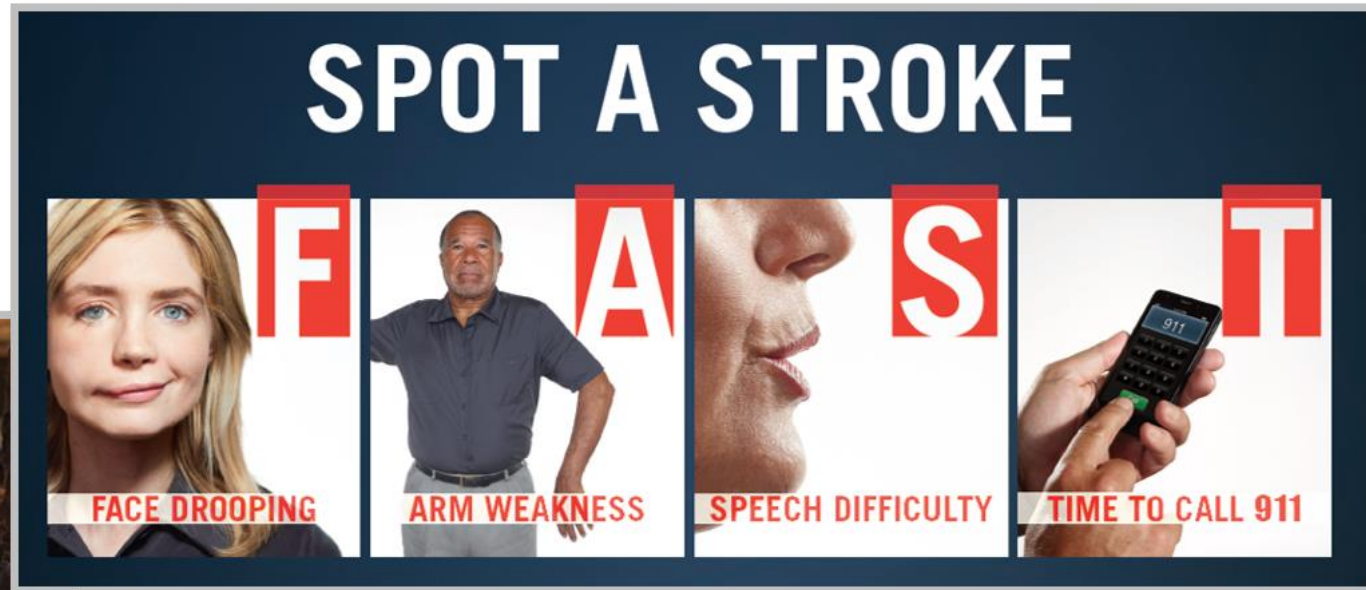


Community Education

Risk Factors & Warning Signs



*Raising awareness
about FAST,
sodium, high blood
pressure & AFib*



Sneaky
Salt -
you're
everywhere!

Excess salt is in more
foods than you think.
Learn more now!

www.heart.org/sodium

SALT



140

= is too =
HIGH



heart.org/HBP

The
AFibFive

5 Steps to Your Healthiest Life with AFib



Primary & Secondary Prevention

Resources for Practitioners

Blood Pressure Category	Systolic mm Hg (upper #)		Diastolic mm Hg (lower #)
Normal	less than 120	and	less than 80
Prehypertension	120 – 139	or	80 – 89
High Blood Pressure (Hypertension) Stage 1	140 – 159	or	90 – 99
High Blood Pressure (Hypertension) Stage 2	160 or higher	or	100 or higher
Hypertensive Crisis (Emergency care needed)	Higher than 180	or	Higher than 110

Resources Include:

- Patient Education Handouts
- Customizable Spot a Stroke F.A.S.T. Materials
- Community Slide Decks
- EMS Marketing and Training Tools
- Stroke Infographics

Check it out at [StrokeAssociation.org/resources](https://strokeassociation.org/resources)!



Even the strongest individual needs support.

► www.heart.org/supportnetwork



Medtronic

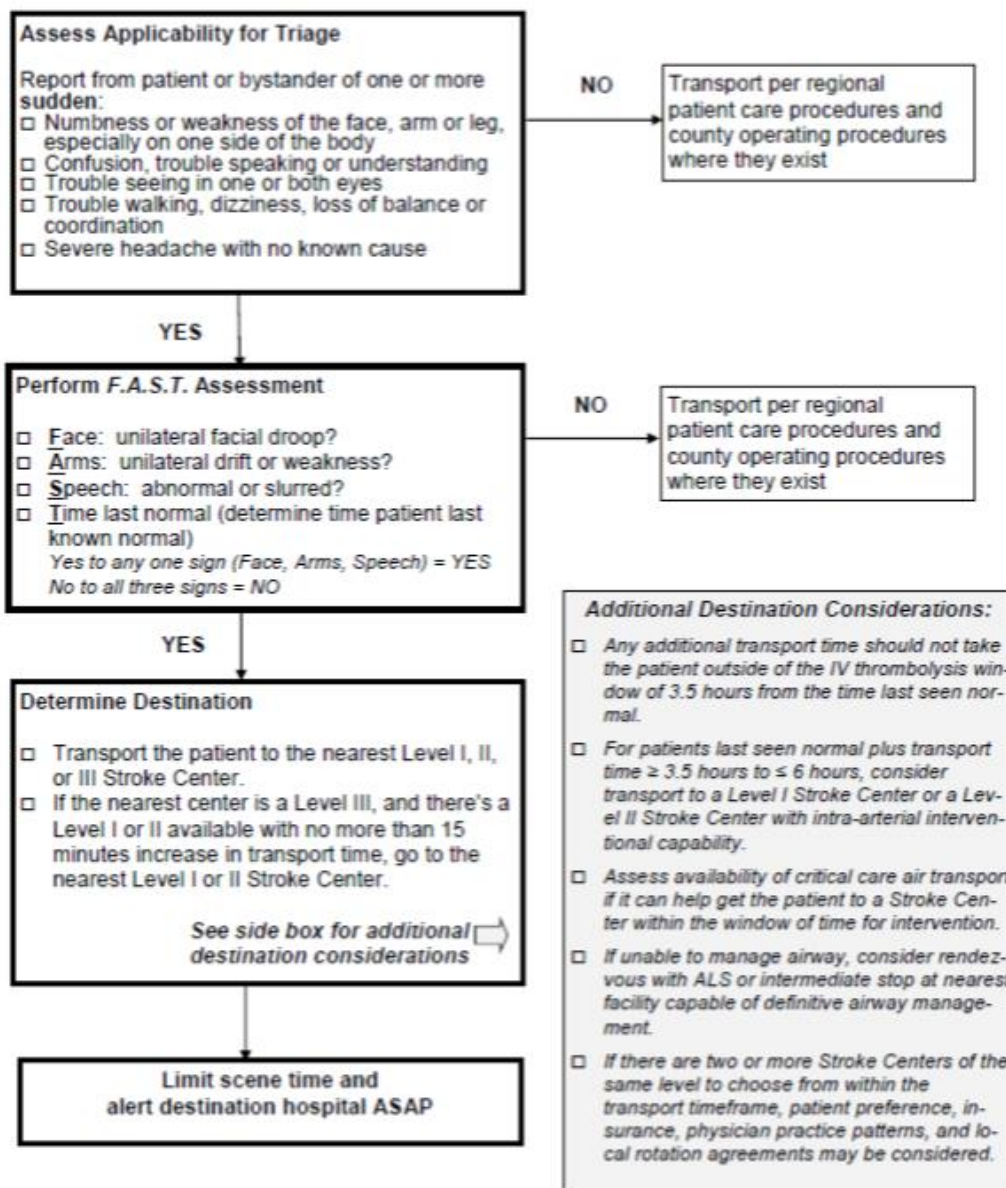
Supports the American Heart Association/American Stroke Association's Cryptogenic Stroke Initiative

What's at the heart of a cryptogenic stroke?

A stroke of unknown cause, or cryptogenic stroke, provides few answers. You can take action to find the cause and help prevent another stroke from occurring

Getting results with our new Blood Pressure Algorithm, the Stroke Resource Center, education on cryptogenic stroke, & an online community on the Support Network





STEP 1: Assess Likelihood of Stroke

- Numbness or weakness of the face, arm, or leg, especially on one side of the body
- Confusion, trouble speaking, or understanding
- Trouble seeing in one or both eyes
- Trouble walking, dizziness, loss of balance, or coordination
- Severe headache with no known cause

If any of above, proceed to STEP 2, if none, transport per regional PCP/county operating procedures

STEP 2: Perform F.A.S.T. Assessment (positive if any of Face/Arms/Speech abnormal)

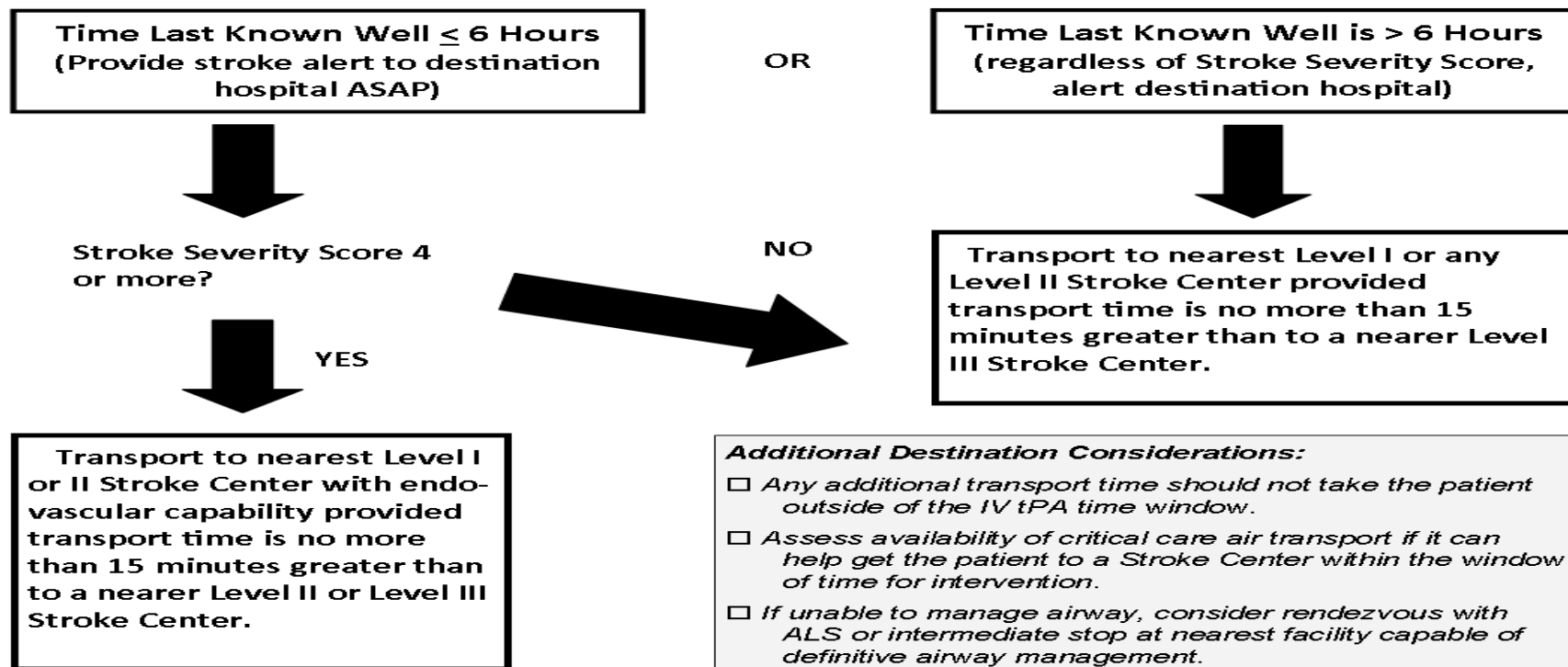
- **Face:** Unilateral facial droop
- **Arms:** Unilateral arm drift or weakness
- **Speech:** Abnormal or slurred
- **Time:** Best estimate of Time Last Known Well = _____

If FAST negative, transport per regional/county operating procedures

STEP 3: If F.A.S.T. Positive - Calculate Stroke Severity Score

Facial Droop: Absent 0 Present 1
Arm Drift: Absent 0 Drifts 1 Falls Rapidly 2
Grip Strength: Normal 0 Weak 1 No Grip 2
Total Stroke Severity Score = _____ (max. 5 points)

STEP 4: Determine Destination: Time Last Known Well + Stroke Severity Score



Additional Destination Considerations:

- ☐ Any additional transport time should not take the patient outside of the IV tPA time window.
- ☐ Assess availability of critical care air transport if it can help get the patient to a Stroke Center within the window of time for intervention.
- ☐ If unable to manage airway, consider rendezvous with ALS or intermediate stop at nearest facility capable of definitive airway management.
- ☐ If there are two or more Stroke Centers of the same level to choose from within the transport timeframe, patient preference, physician practice patterns, and local rotation agreements may be considered.

Why Change the EMS Prehospital Stroke Triage tool?

- In the past primary treatment was tissue plasminogen activator, or tPA, which all facilities can provide.
- Recent research (next slide) has shown that thrombectomy (clot retrieval) is more effective at treating large vessel occlusion ischemic strokes.
- Not all Level II facilities can perform this procedure, so it was necessary to adjust the tool to account for this.
- EMS will now have the ability to transport a qualifying patient to a thrombectomy-capable even though it might not be the nearest.

Thrombectomy Trials 2015

	MR CLEAN	EXTEND-IA	ESCAPE	SWIFT-PRIME
Total N	500	70	316	196
Age limit	none	none	None	80
Time window	6 <u>hrs</u> to initiation	6 <u>hrs</u> to puncture	Up to 12 hours 75% w/in 6 <u>hrs</u>	6 hours to puncture
Vascular Imaging	ICA, M1,2, A1,2; neck ICA occlusion per local judgment	ICA or MCA occlusion	MCA +/- <u>prox</u> ICA Good collaterals	Distal ICA, M1
Brain Imaging	None	ischemic core of less than 70 ml	ASPECTS of 6 to 10	No CT > 1/3 MCA APECTS >= 6 Target mismatch
%tPA	89%	100%	75%	100%
% <u>Retr.</u> Stents	81.5%	100%	86%	100%
%GA	38%	36%	9%	?
% ↑ GO	13.5	31%	24%	25%
NNT	7-8	3	4	4

Key Controversies

- Concern that patients might bypass a tPA capable center in favor of an thrombectomy-capable center, leading to a delay in treatment.
- Concern that thrombectomy-capable facilities will be overwhelmed with the influx of patients that may not need the procedure.

Adoption in the Field

- EMS adoption in the field has been slow ~ but progressing.
- We are developing a tool that each county Medical Program Director can use to train their EMS personnel. Each individual MPD is responsible for training EMS personnel.
- Stroke facilities need to sign attestations indicating their current stroke capabilities and their plan to being providing thrombectomy. This is necessary for EMS triage.

Contact Information

www.doh.wa.gov/ecs

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