Different Strokes for Different Folks:
Improving Triage for Comprehensive vs Primary Stroke Centers

Jason McMullan, MD

Gathering of Eagles

February 19th, 2016

DEPARTMENT OF Emergency MEDICINE

UNIVERSITY OF Cincinnati

CINCINNATI FIRE DEPARTMENT EST. FIRE RESCUE 1853 1ST IN THE NATION


American Heart Association
American Stroke Association®
Together to End Stroke™
INTERNATIONAL STROKE CONFERENCE 2016

Learning from Other Diseases: Triage Models of Trauma and Acute MI

Jason McMullan, MD

International Stroke Conference

February 18th, 2016

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Heart Association | Stroke Association
Together to End Stroke™
INTERNATIONAL STROKE CONFERENCE 2016
Science & Technology Hall Hours
Wednesday, Feb. 17
10:00 am – 4:00 pm
Thursday, Feb. 18
10:00 am – 4:00 pm
Poster Hall Hours
(Wed, Feb 17 & Thurs, Feb 18)
Poster Hall Open for Attendees
8:00 am – 6:45 pm
Poster Sessions
5:15 pm – 6:45 pm
SIEMENS
MS1
stryker
Neurovascular

Cincinnati Pre-hospital Stroke Scale

1. FACIAL DROOP: *Have patient show teeth or smile.*

Normal: both sides of the face move equally

Abnormal: one side of face does not move as well as the other side

2. ARM DRIFT: *Patient closes eyes & holds both arms out for 10 sec.*

Normal: both arms move the same or both arms do not move at all

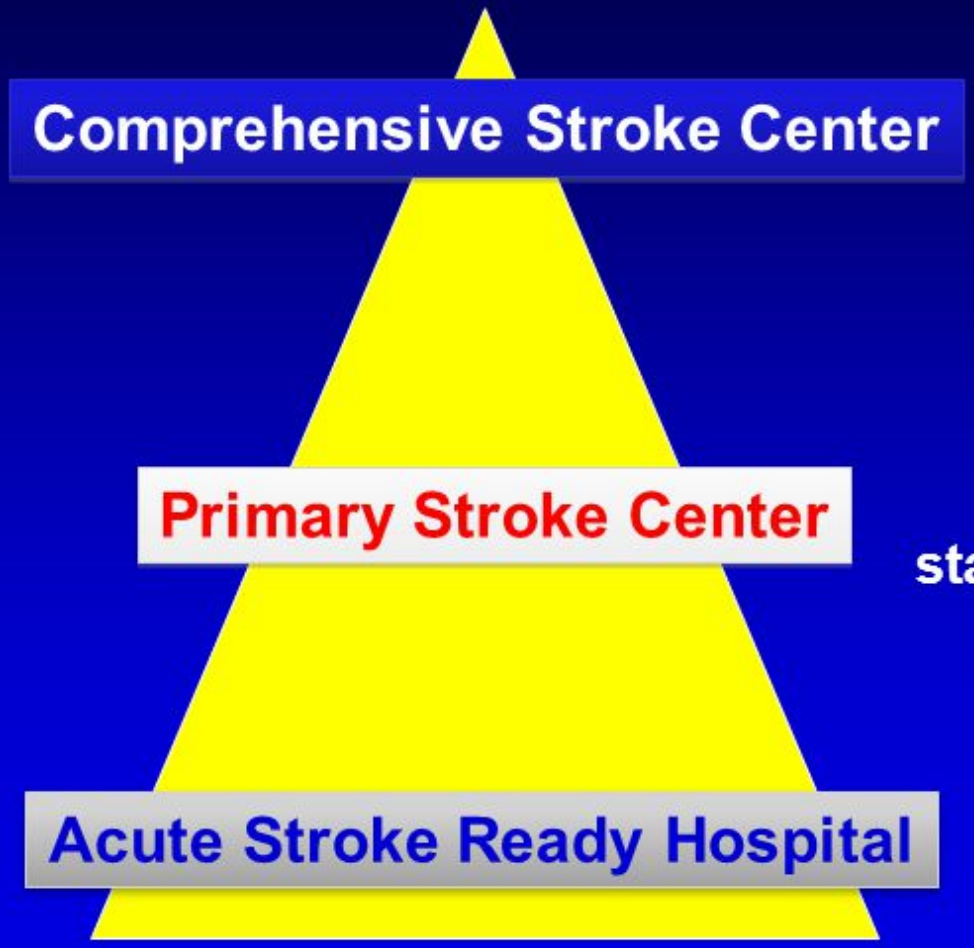
Abnormal: one arm does not move or drifts down compared to the other

3. ABNORMAL SPEECH: *Have the patient say "you can't teach an old dog new tricks."*

Normal: patient uses correct words with no slurring **Abnormal:** patient slurs words, uses the wrong words, or is unable to speak

INTERPRETATION: If any 1 of these 3 signs is abnormal, the probability of a stroke is 72%.

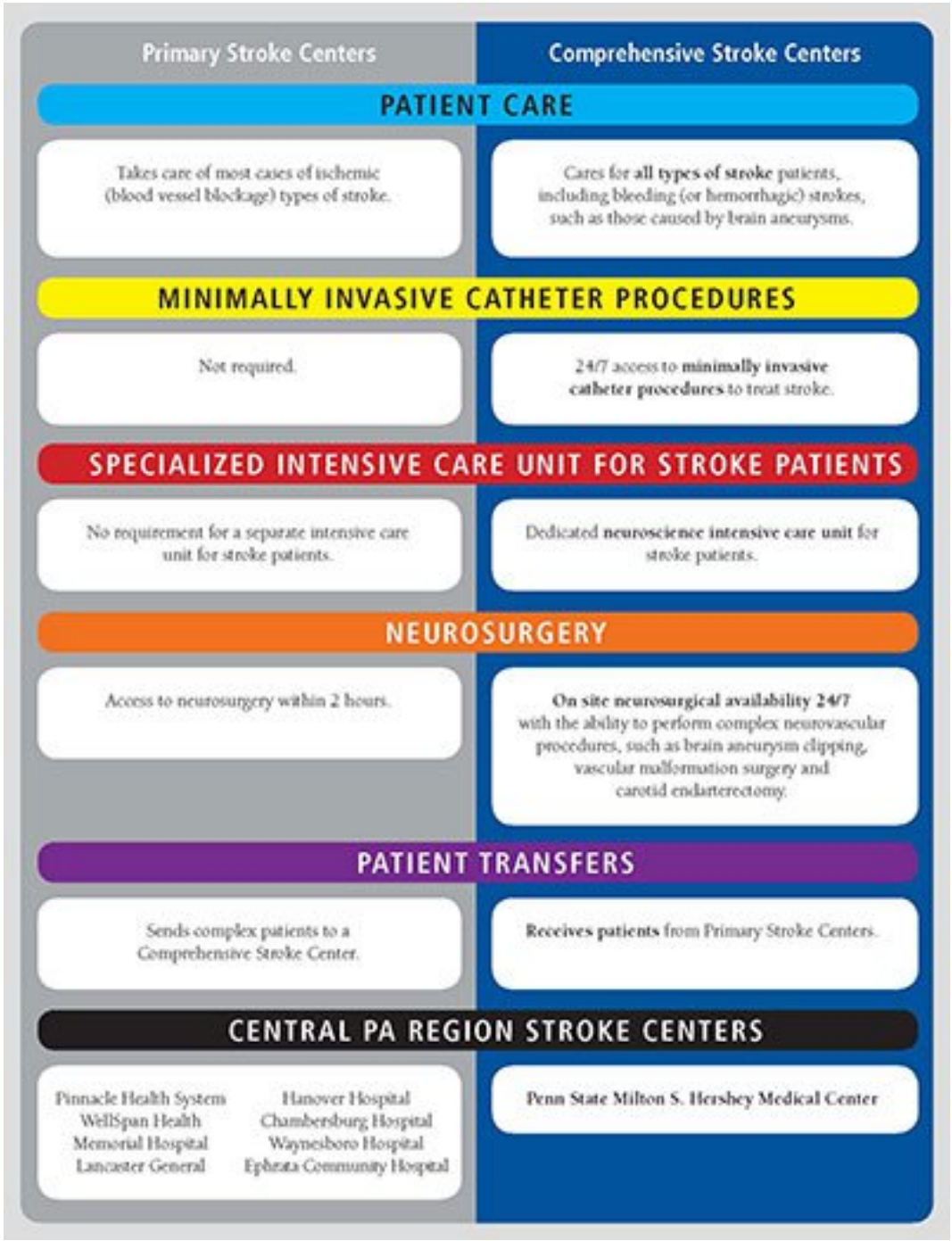
Characteristics of Different Stroke Centers



Academic Medical Center
Tertiary Care facility

Wide range of hospitals;
standard stroke care; stroke unit;
use TPA

Rural hospitals; basic care;
drip and ship;
use tele-technologies



CSC

AIS, ICH, SAH

24/7 Endovascular Therapy

Neuroscience ICU

24/7 Neurosurgery

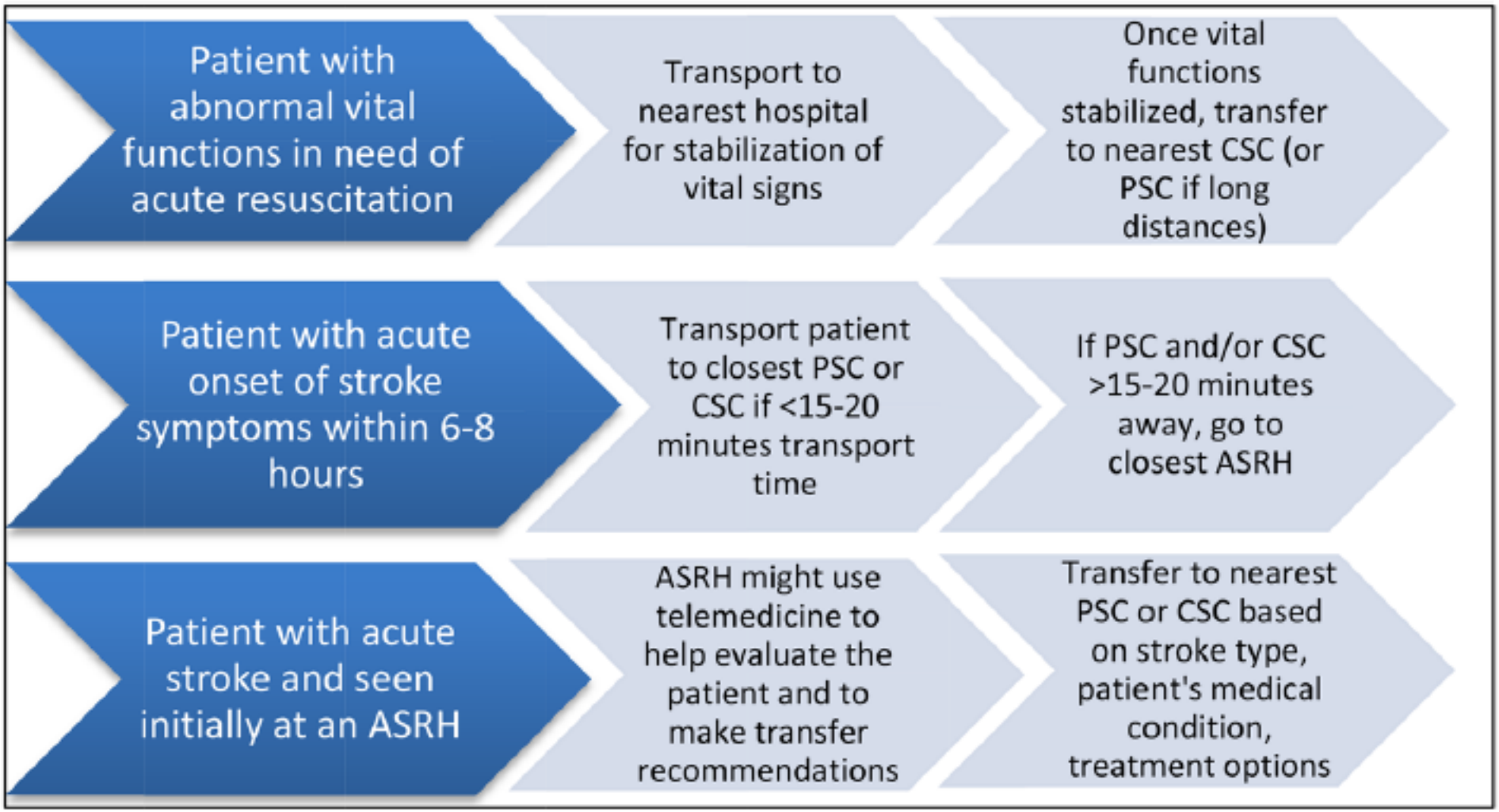
AHA/ASA Policy Statement

Interactions Within Stroke Systems of Care

A Policy Statement From the American Heart Association/American Stroke Association

Randall Higashida, MD, FAHA, Chair*; Mark J. Alberts, MD, FAHA, Co-Chair*;
David N. Alexander, MD; Todd J. Crocco, MD; Bart M. Demaerschalk, MD;
Colin P. Derdeyn, MD, FAHA; Larry B. Goldstein, MD, FAHA;
Edward C. Jauch, MD, MS, FAHA; Stephan A. Mayer, MD, FAHA; Neil M. Meltzer, MPH;
Eric D. Peterson, MD, FAHA; Robert H. Rosenwasser, MD, FAHA; Jeffrey L. Saver, MD, FAHA;
Lee Schwamm, MD, FAHA; Debbie Summers, RN, MSN, ACNS-BC, FAHA;
Lawrence Wechsler, MD, FAHA; Joseph P. Wood, MD, JD;
on behalf of the American Heart Association Advocacy Coordinating Committee

Unless there are other compelling mitigating circumstances, EMS should not bypass the closest facility to go to a higher-level facility if such a diversion would add more than 15 to 20 minutes to the transportation time. This is based in part on the 15- to 20-minute time window for arrival of members of an


Patient with abnormal vital functions in need of acute resuscitation
Transport to nearest hospital for stabilization of vital signs
Once vital functions stabilized, transfer to nearest CSC (or PSC if long distances)
Patient with acute onset of stroke symptoms within 6-8 hours
Transport patient to closest PSC or CSC if <15-20 minutes transport time
If PSC and/or CSC >15-20 minutes away, go to closest ASRH
Patient with acute stroke and seen initially at an ASRH
ASRH might use telemedicine to help evaluate the patient and to make transfer recommendations
Transfer to nearest PSC or CSC based on stroke type, patient's medical condition, treatment options

N ENGL J MED 372;11 NEJM.ORG MARCH 12, 2015

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Randomized Assessment of Rapid Endovascular Treatment of Ischemic Stroke

M. Goyal, A.M. Demchuk, B.K. Menon, M. Eesa, J.L. Rempel, J. Thornton, D. Roy, T.G. Jovin, R.A. Willinsky, B.L. Sapkota, D. Dowlatshahi, D.F. Frei, N.R. Kamal, W.J. Montanera, A.Y. Poppe, K.J. Ryckborst, F.L. Silver, A. Shuaib, D. Tampieri, D. Williams, O.Y. Bang, B.W. Baxter, P.A. Burns, H. Choe, J.-H. Heo,

This article was published on February 11, 2015, at NEJM.org.

Unintended Consequences

tri·age

/trēˈäZH, ˈtrē ˌäZH/

noun

1. (in medical use) the assignment of degrees of urgency to wounds or illnesses to decide the order of treatment of a large number of patients or casualties.

verb

1. assign degrees of urgency to (wounded or ill patients).

Implication:

get the right patient to the right place in the right amount of time

1,600,000

Overtriage

Patient taken to CSC who doesn't need it

Delays tPA

Starves PSC/ASRH

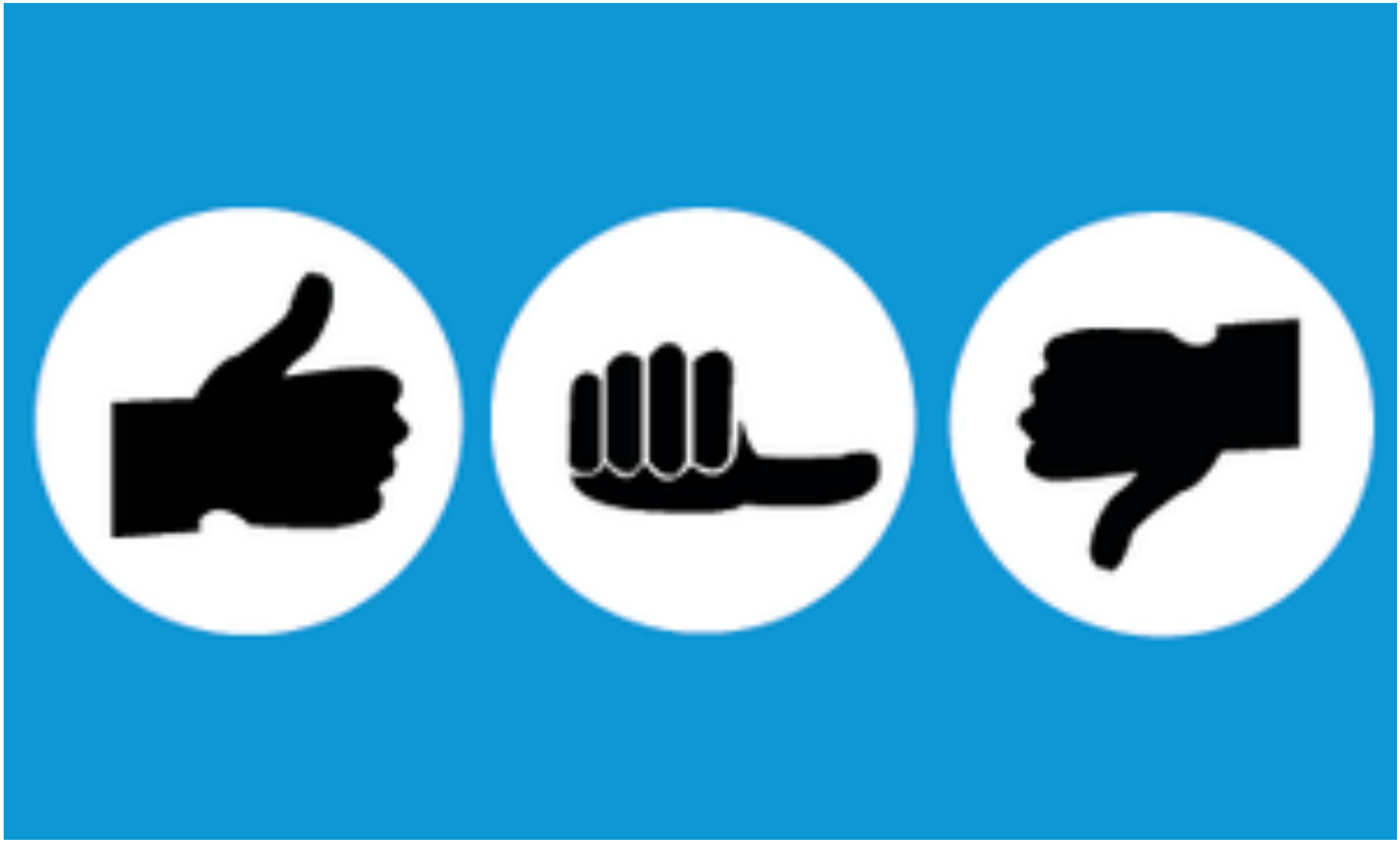
Volume ~ Outcomes

Undertriage

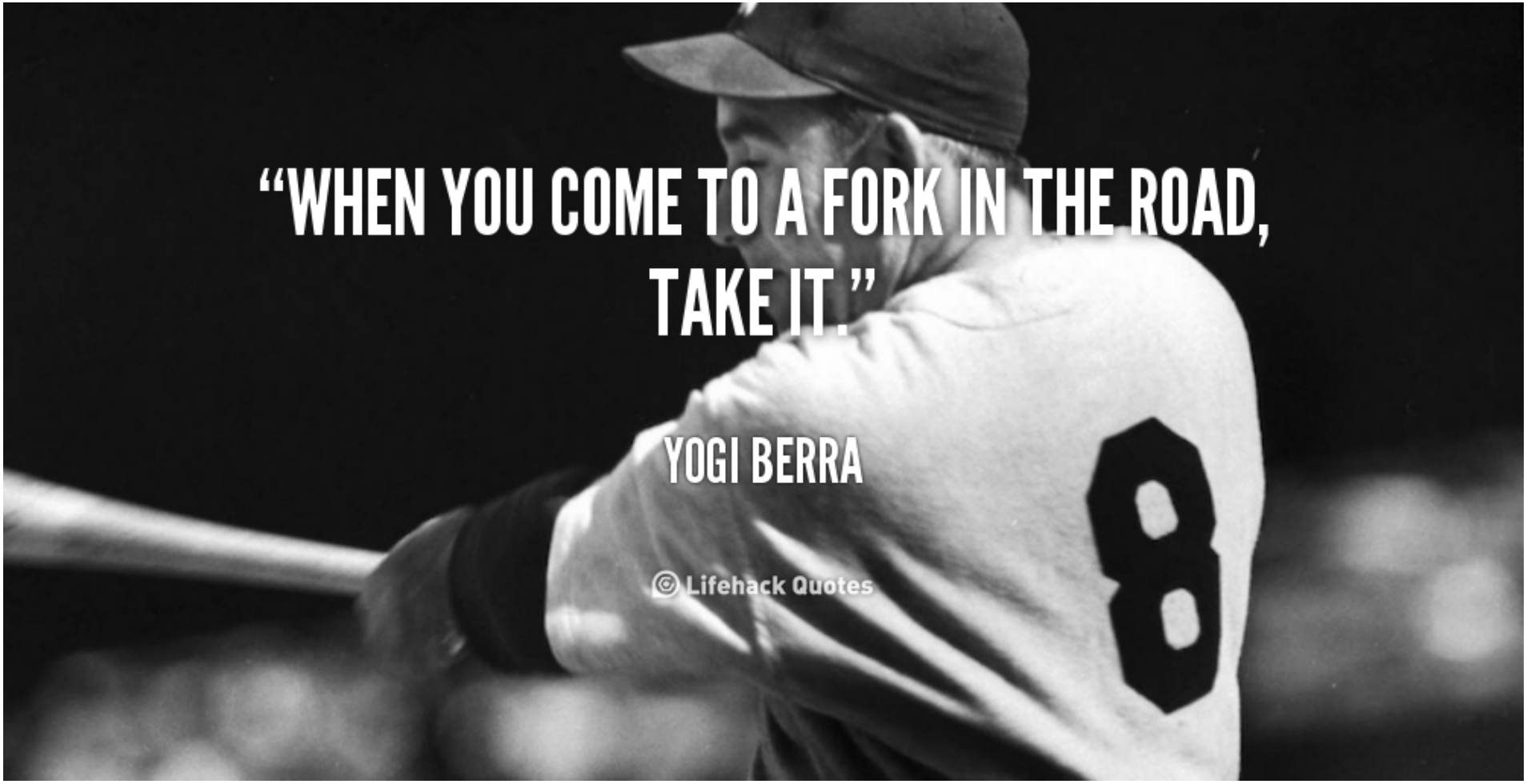
Patient not taken to CSC who needs it

Delays endovascular care or neurosurgery

Transfer times for STEMI/Trauma



	LAMS	3ISS	RACE	C-STAT
Publication Year	2001	2005	2014	2015
Derivation n	119	171 Prospective	654	624
Goal of scale	LVO	LVO Severe Stroke	LVO	Severe Stoke LVO
Independently Validated	Yes (Abstract)	No	Yes	Yes
Validation n			357	650
# of items scored	3	3	5-6	4
Time to complete	20-30 second	20-30 second	Variable	< 60 seconds
Sensitivity/specificity severe stroke		NIHSS 14 86%/95%	N/A	NIHSS 15 89%/72% NIHSS 10 79%/89%
Sensitivity/specificity LVO	81%/89%	67%/92%	85%/65%	83%/40%
Evaluated -- prehospital setting	Yes (FAST-MAG)	No	Yes	Yes


"WHEN YOU COME TO A FORK IN THE ROAD, TAKE IT."
YOGI BERRA
© Lifehack Quotes

Prevalence of Disease
Drive Times
DTN
P2P

They say no plan survives first contact with implementation…

Regionalization Keys to Success

- Put the patient first
  - *Competing centers may become partners*
- Honestly define centers and capabilities
  - *"Sometimes" doesn't count*
- Clearly define patients that should bypass
  - *Complicated tools will fail*
- Accept one size will not fit all
  - *Improvise, adapt, and overcome locally*

Different Strokes for Different Folks:
Improving Triage for Comprehensive vs Primary Stroke Centers

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Table 25

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