

Functional Outcomes at 90 Days, According to the Score on the Modified Rankin Scale.

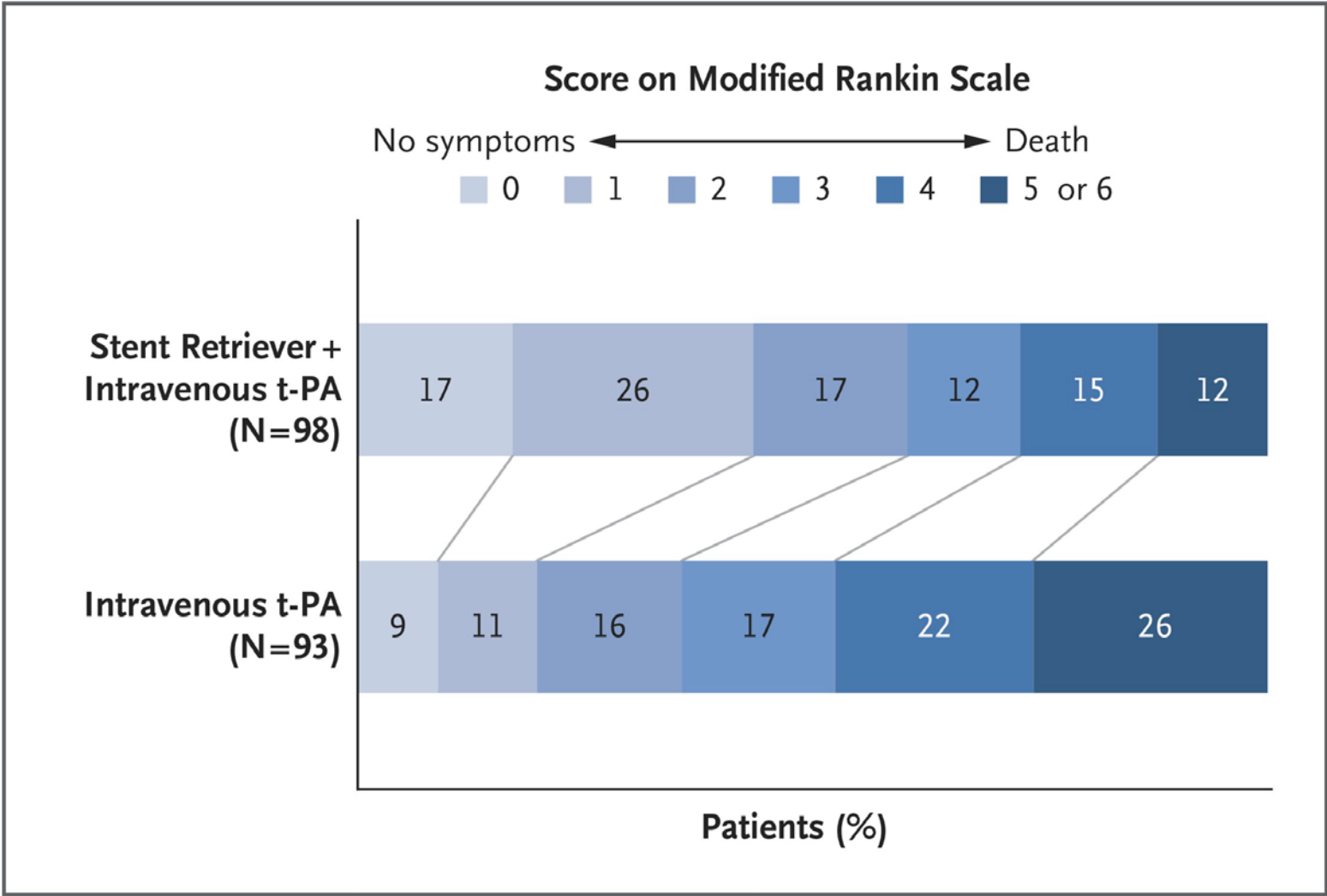


Fig 2 Odds ratio for favourable outcome (score 0-1 on modified Rankin scale) with time to treatment with recombinant tissue plasminogen activator after onset of stroke in binary logistic regression analysis and comparisons with trials (pooled analysis of randomised clinical trials of alteplase for acute stroke⁴).

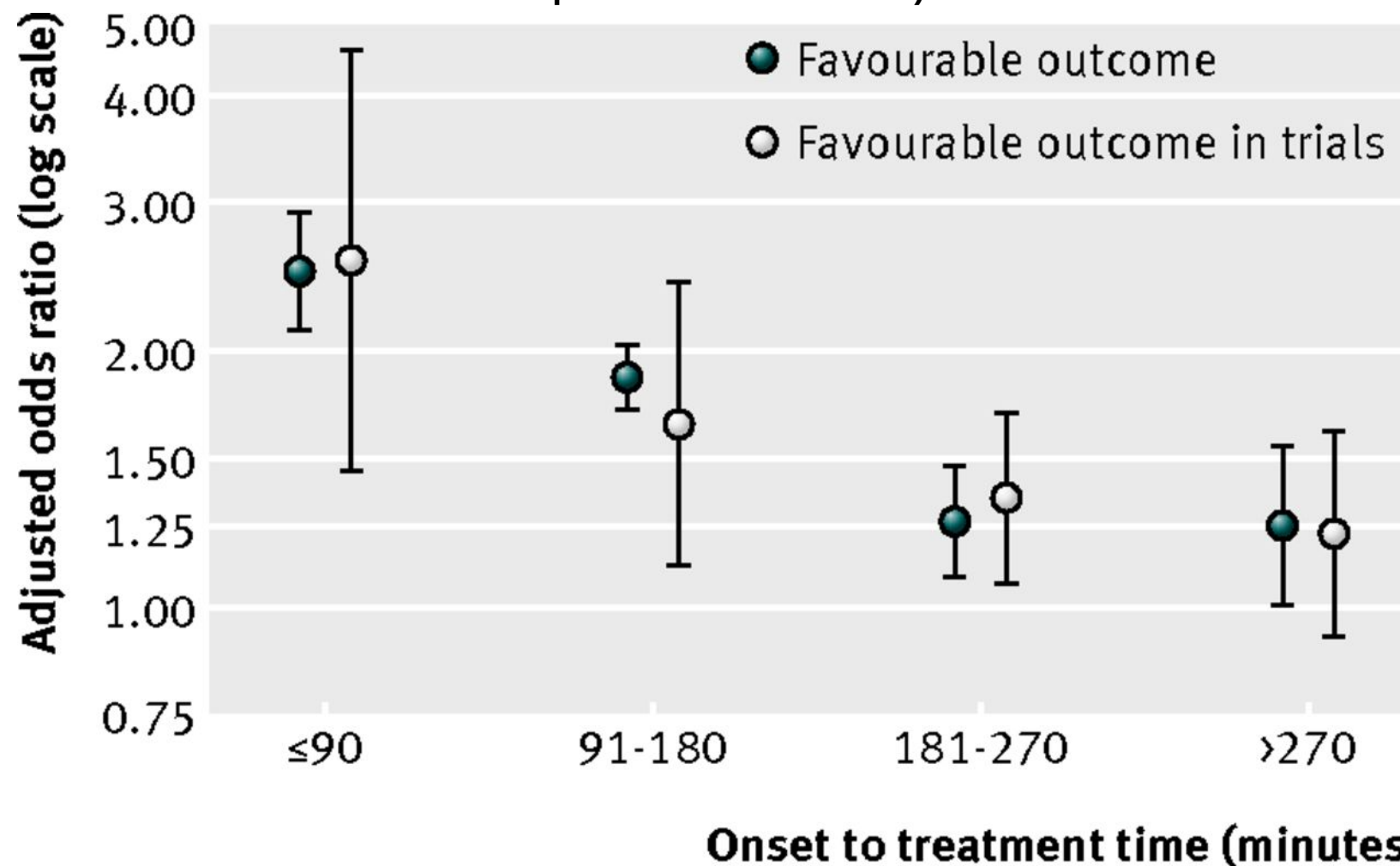
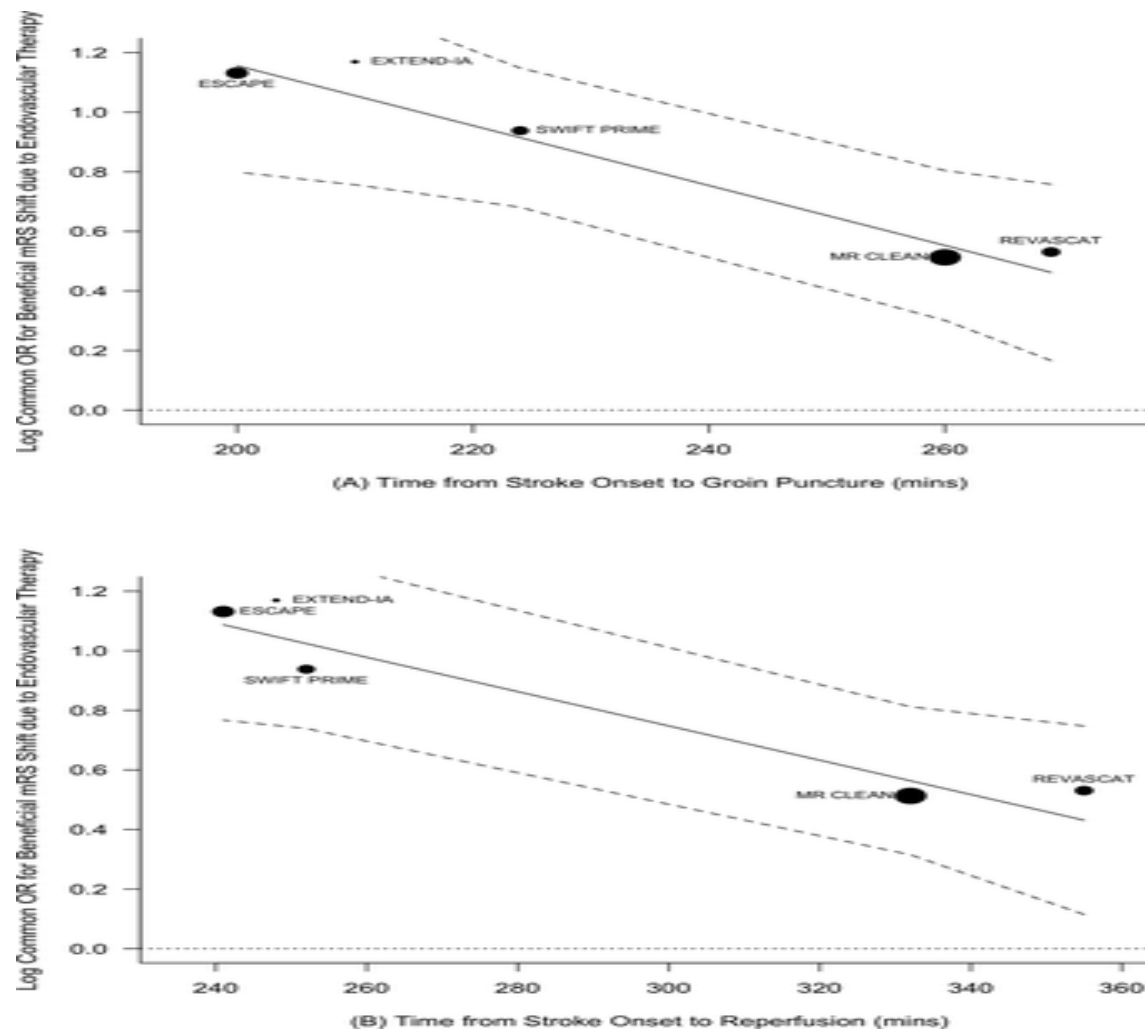


Fig 3. Meta-regression analysis relating trial effect estimates to workflow efficiencies.

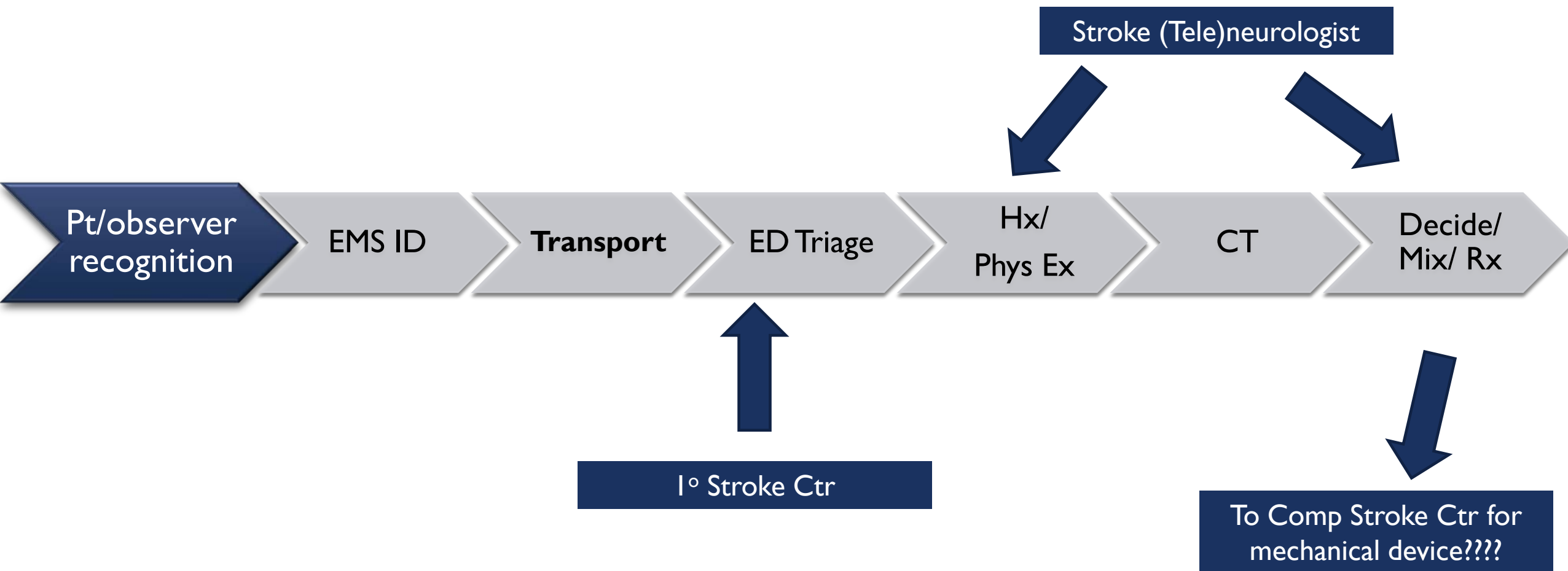


Bush CK, Kurimella D, Cross LJS, Conner KR, Martin-Schild S, et al. (2016) Endovascular Treatment with Stent-Retriever Devices for Acute Ischemic Stroke: A Meta-Analysis of Randomized Controlled Trials. PLOS ONE 11(1): e0147287.
<https://doi.org/10.1371/journal.pone.0147287>
<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0147287>

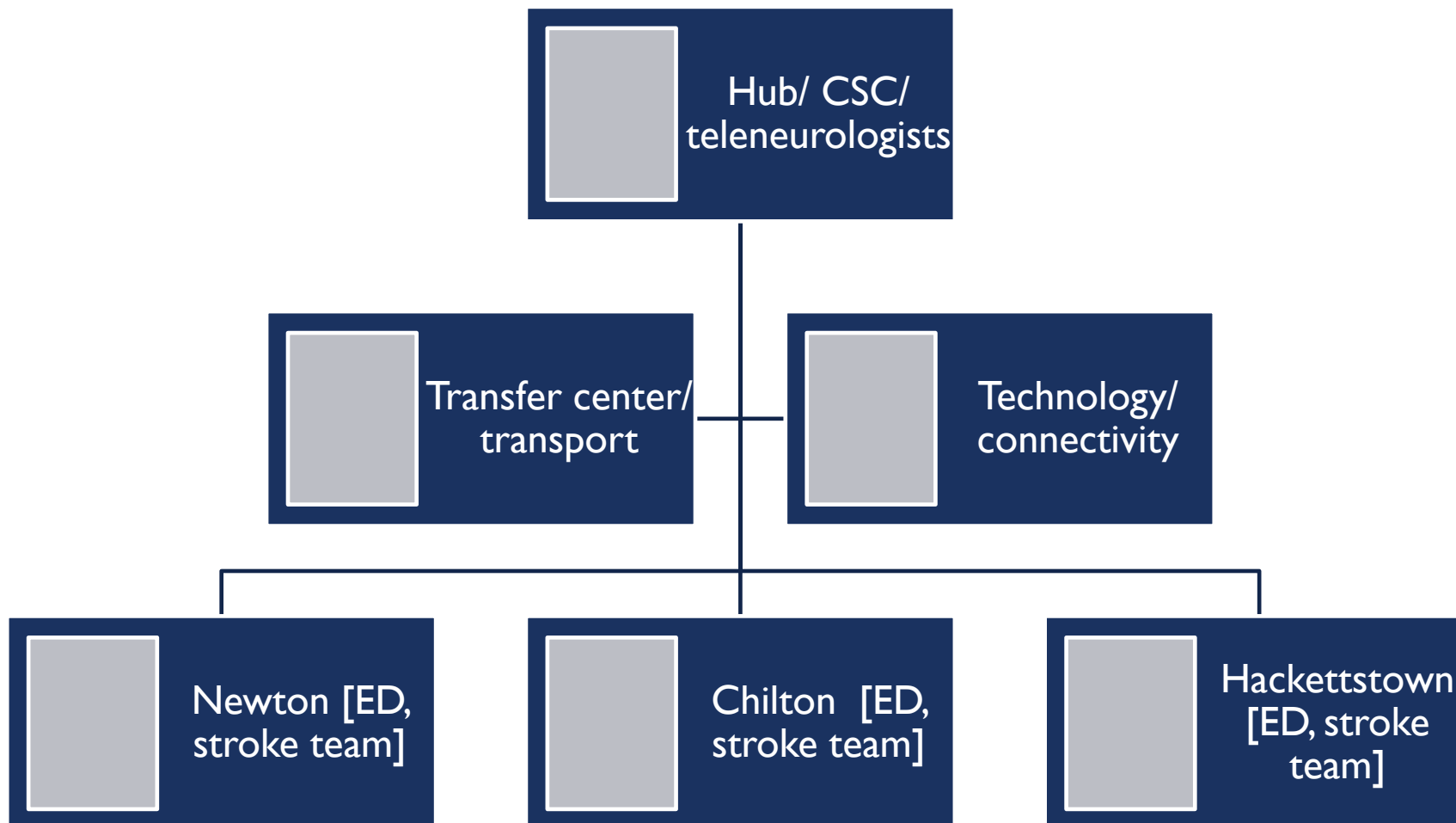
TELESTROKE: WHERE TO BEGIN?

- ED:
 - Does tPA work??? **YES**
 - Oh no, change!!!!
 - Not another top priority!!!!
- Neurologists:
 - 'I don't want to lose business'
 - 'I don't want to come in at 2AM'
 - What me hurry??
 - Give up control to strangers? Can I trust them?
- Technical:
 - 2005: PolyCom – do it yourself
 - 2010: InTouch integrated system
 - Hardware, software, connectivity via own cloud
 - Documentation into EMR
 - PACS
- Staffed 24/7 by 3 Stroke Attendings
 - use desktop, laptop, iPad, iPhone
- ED: collaboration of ED attendings, nurses, (residents)
- Connecting one of many EDs to right resources (stroke neurology, neuro-intervention, transfer when needed)

TIME: THE ENEMY OF BRAIN

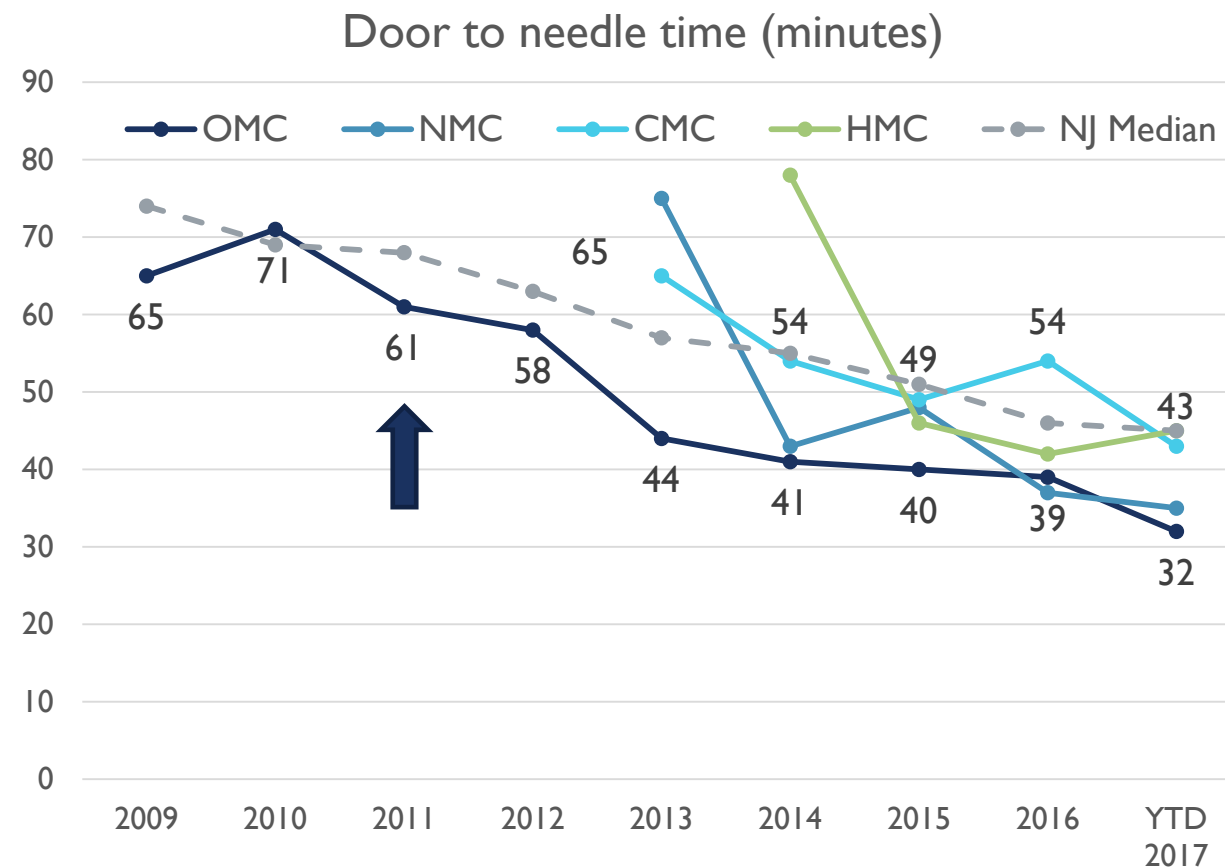


TELEMEDICINE – A KEY PART OF THE SYSTEM OF CARE



TELESTROKE @ ATLANTIC HEALTH

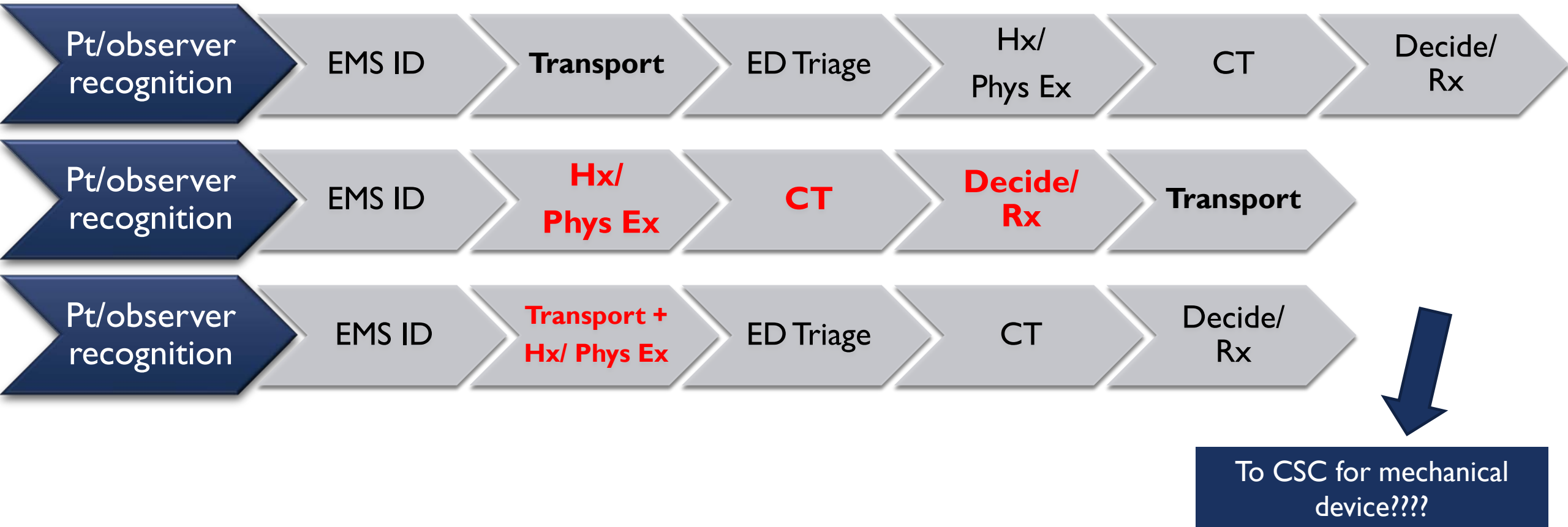
Atlantic Health	Start Date
Overlook – Summit ED	November 2010
Overlook – Union ED	November 2010
Overlook Neuro ICU	November 2010
Holy Name	August 2012
Newton	July 2013
Chilton	November 2013
Hackettstown	February 2015
Morristown	April 2016



TIME: THE ENEMY OF BRAIN

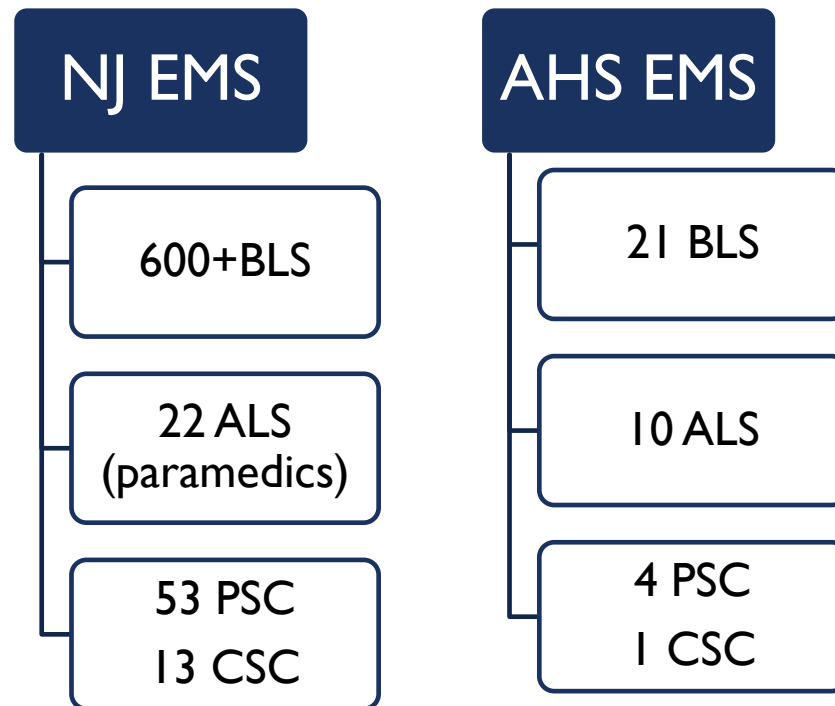
CAN WE USE PRE-HOSPITAL TIME?

MECHANICAL REPERFUSION BETT



NEW JERSEY: EMS CHALLENGES

- *New Jersey*: Most densely populated state in US (9M) combining best of urban traffic with suburban sprawl & cell service befitting rolling hills, valleys



CONSIDERATIONS

$$\underline{\textit{Time}} = \textit{time to reach scene} + \textit{time on scene} + \textit{transport} + \textit{assess} + \textit{CT} + \textit{mix/Rx}$$

- **MSTU:**
 - Time saved=transport time
 - Must be stationary for scan
 - Must be available for all strokes (exclusive)
 - Does getting lone unit to patient take longer than transport time?
 - Berlin: <16 minute base to patient
 - ***If mechanical candidate, have lost transit time***
- ***In transit telestroke:***
 - Time saved = assessment done in transit;
 - Too close: can't do much (> 10 min from ED?)
 - **Connectivity** an issue in transit
 - Advantage of tiered (BLS/ALS) approach; without this would need to equip far more vehicles
 - ***Mechanical candidate: may be at CSC***

COST

■ **MSTU:**

- Initial: \$0.75-1.5M
- Operating:
 - CT tech, ILP, EMT/RN
 - \$1M/yr (24/7)
 - Teleneurologist
- Limitations:
 - MSTU dedicated to stroke only
 - Base to pt time < transport time (16 mins?)
- Availability: 40-50%, for hours available
- **Minutes saved/treated pt: 25; /pop pt 12**

■ ***In transit telestroke:***

- Initial: \$23K/unit
- Operating:
 - Hardware/software \$10k/yr/unit
 - Teleneurologist
- Limitations:
 - Territory covered by ALS units
 - In non-tiered states, multiple ambulances to cover population
 - Transport time > 10 minutes
- Availability: limited only by # units
- **Minutes saved/treated pt: 13; /pop pt 13**

Which gets appropriate patients to Comprehensive Stroke Center Faster?