WHY YOU, A CARDIOLOGIST, SHOULD BE INVOLVED IN A STROKE PROGRAMME

Dr Mark Abelson

Interventional Cardiologist

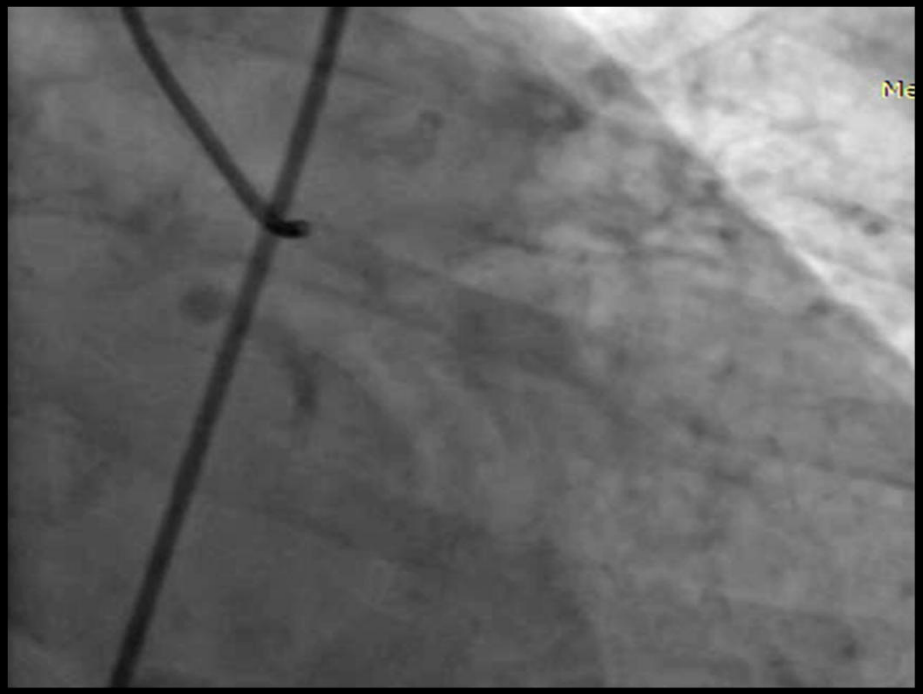
Somerset West

Honorary Consultant

Groote Schuur Hospital

Cape Town

Aren’t we good?



PCI Indications and Outcomes According to Clinical Presentation

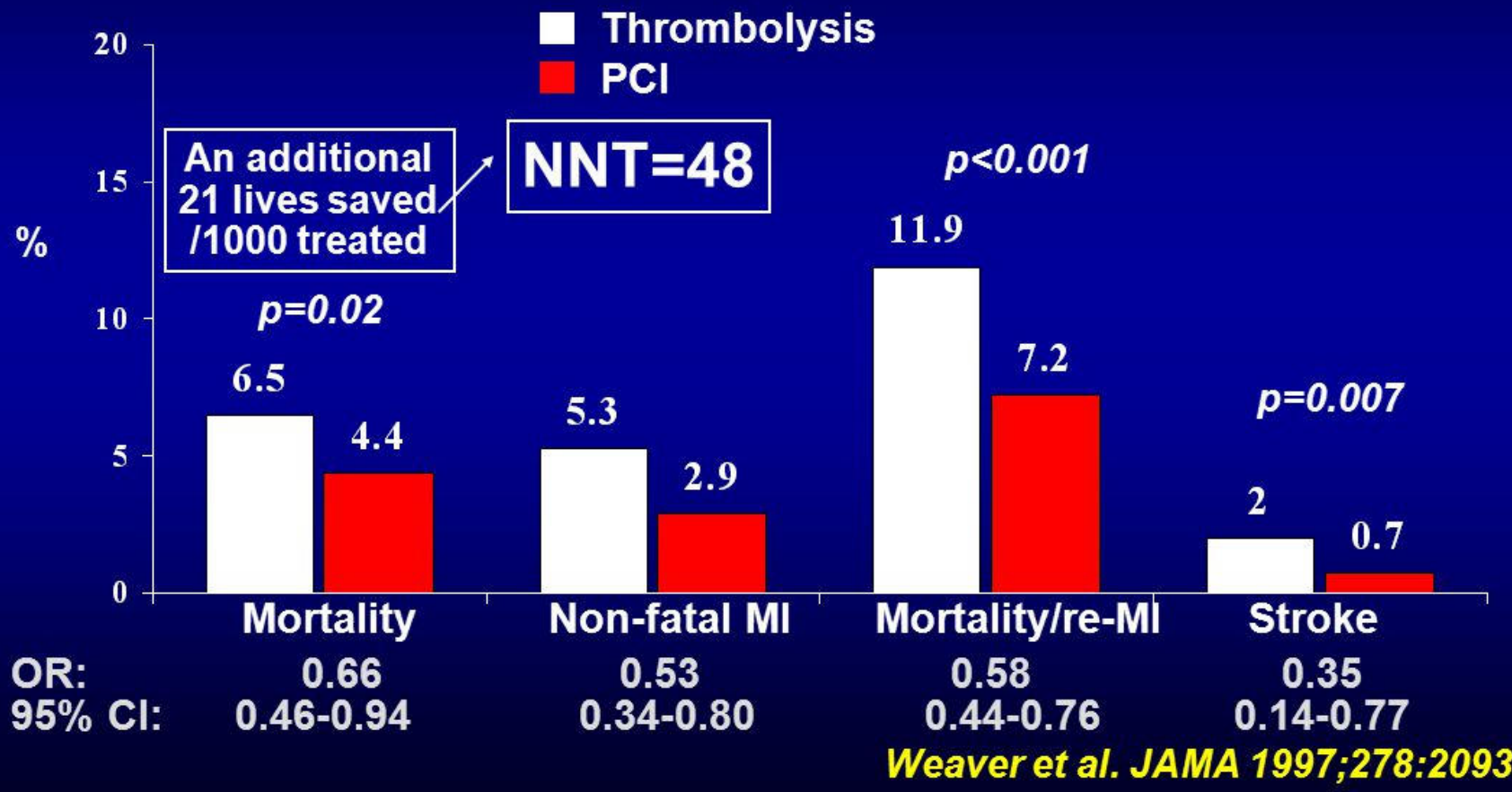
For every 100 pts treated with primary angioplasty rather then thrombolytic therapy, primary angioplasty (when performed without significant delays) saves approximately how many lives?

a. <1
b. 2-3
c. 4-6
d. 6-7
e. >7

B

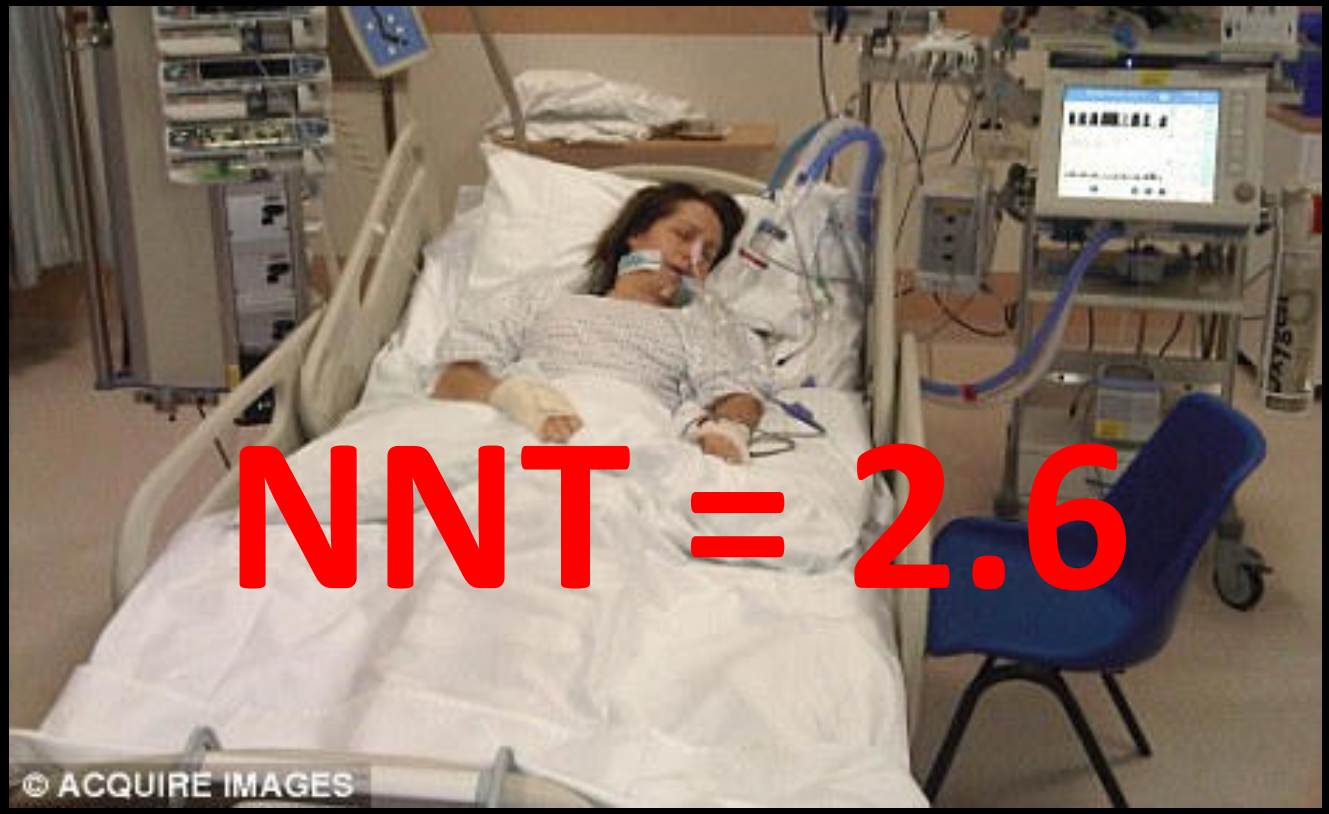
Thrombolysis Vs. PCI for STEMI

30-Day Event Rate in 21 Randomized Trials



Weaver et al. JAMA 1997;278:2093

Large vessel stroke
Thrombolysis vs Mechanical Embolectomy

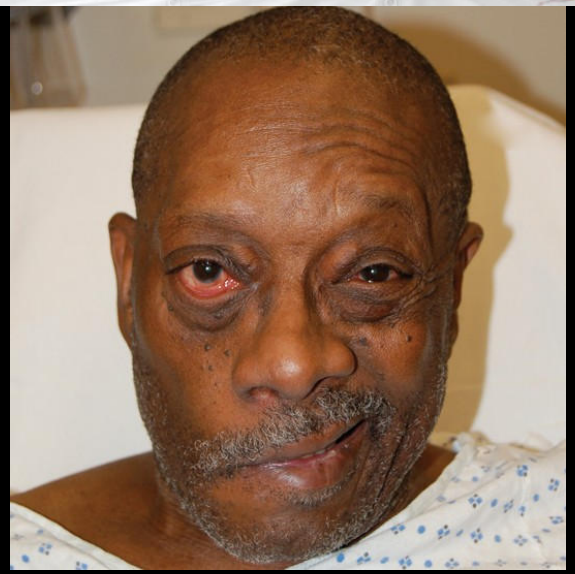


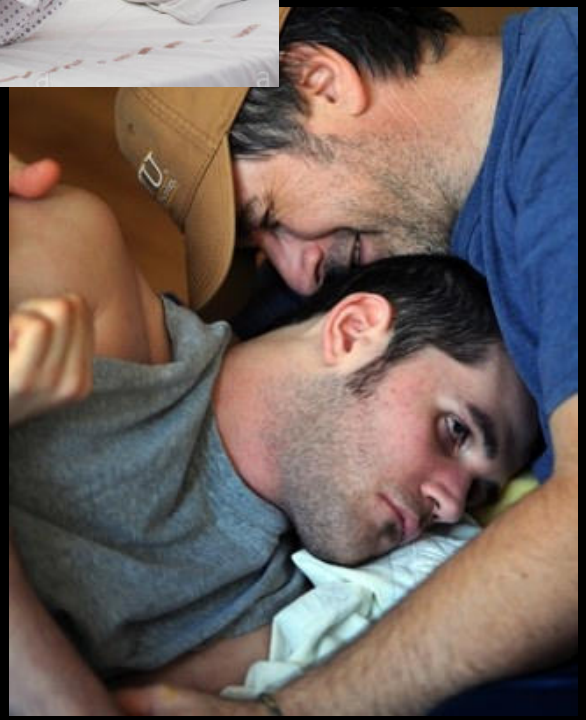
Large anterior MI – mortality 10%

- heart failure 40% (most controlled on medication)

- Real world large vessel stroke outcomes

- 56% severely disabled
- 36% dead
- 8% good outcome





Mechanical Embolectomy Trials

(NEJM 372 Jan/March/June 2015)

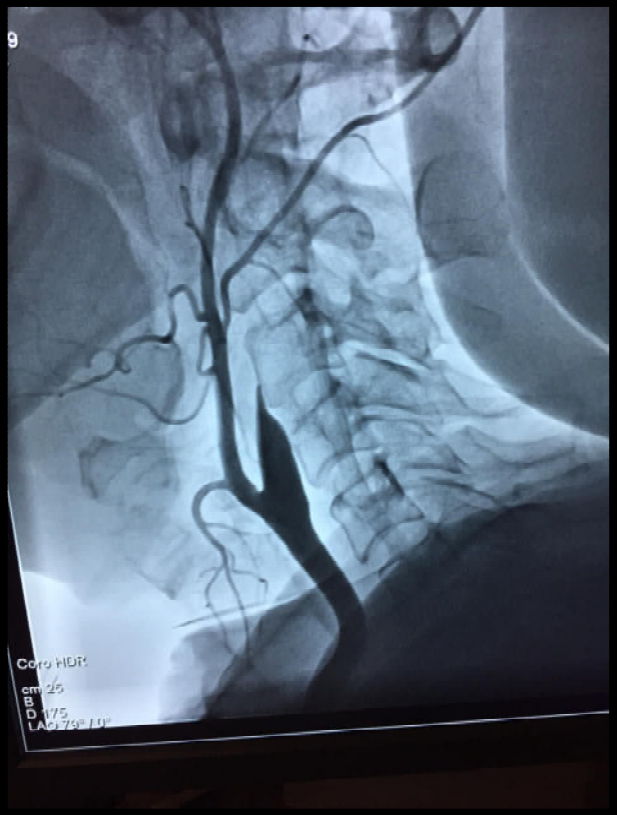
- Patients with large artery occlusion strokes (all had CTA)
- all treated with iv tPA were then randomised to mechanical intervention or no intervention
- Onset to Rx with tPA<4.5h
- Cath lab 6-8 hours after onset
- Embolectomy successfully opened 80-90% of occluded vessels
- Good outcome seen at 90 days – **50-70%** of patients (30% tPA arm)
- No increase in ICH with intervention despite lytics
- Improved mortality
- Overwhelmingly positive **NNT=2.6** ($p<0.0001$)

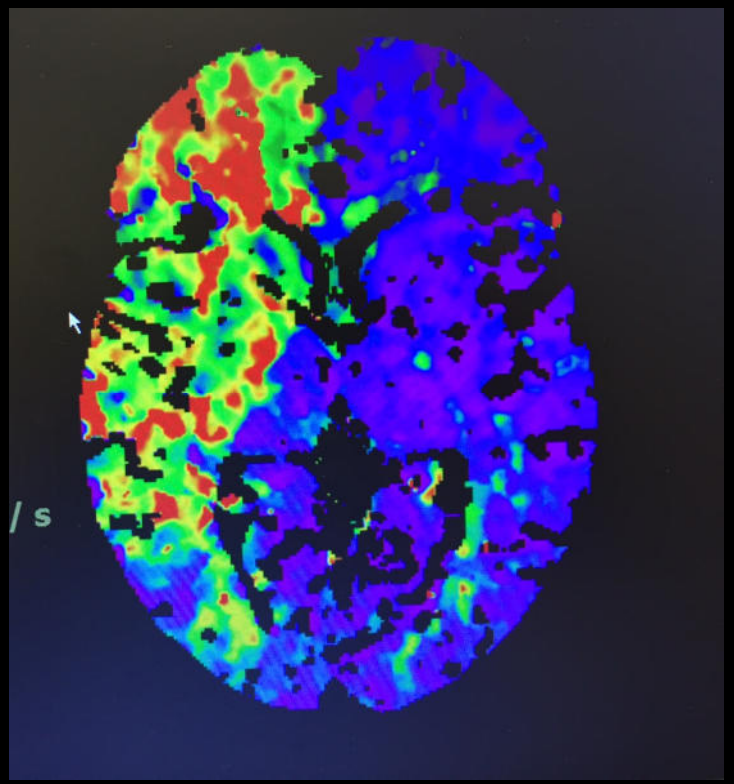
How late can intervention be done and still benefit the patient?

- **Dawn Trial** – presented European Stroke Congress May 2017
- Patients with large artery occlusion stroke randomised to embolectomy

  6-24 hours after stroke onset (included wake up strokes)
- Neuro-imaging CTA perfusion/MRI showed core infarction 20-30ml (walnut) with significant brain still at risk
- Approximately 50% had been given iv tPA which failed
- Good outcome (functional independence) @ 90days – **48% vs 13%** of those receiving standard management
- **NNT=2.8**

55y old lady one week post large anterior MI





Day 1 post embolectomy

Publications

- Abelson MJ; Roos J. Mechanical Embolectomy for Large Vessel Ischemic Stroke. A case report. Cardiovascular Journal of Africa 2008; 19:4

- Abelson MJ. Management of Acute Ischemic Stroke. SA Heart 2008;5/3:102-105

- Abelson MJ, Roos J. Mechanical Embolectomy for Large Vessel Ischemic Stroke: A Cardiologists Experience. Cath Cardiovasc Intervetions 2010;76:309-315

- Widimsky Peta, Asil T, Abelson Mark, Goktekin Omer et al

Direct Catheter-Based Thrombectomy for Acute Ischemic Stroke: Outcomes of Consecutive Patients Treated in Interventional Cardiology Centers in Close Cooperation With Neurologists.

J Am Coll Cardiol. 2015 Jul 28;66(4):487-8.

- Results

Abelson MJ, Roos J. Mechanical Embolectomy for Large Vessel Ischemic Stroke: A Cardiologists Experience. Cath Cardiovasc Intervetions 2010;76:309-315

TABLE I. Patient Characteristics

	$N = 22$
Male	10 (46%)
Age-mean (range)	66.9 (22–96)
Atrial fibrillation	10 (46%)
Hypertension	9 (41%)
Diabetes	1 (5%)
Smoker	5 (23%)
Hypercholesterolemia	11 (50%)
Previous stroke	1 (5%)
Failed IV rt-PA	1 (5%)
Duration (min)	
Onset to presentation mean (range)	203 (0–570)
Presentation to theatre mean (range)	68.4 (15–300)
Total duration—mean (range)	284 (102–600)
-median	245
NIHSS score at presentation—mean	20.1 (8–40)
-median	18.5
Mortality at 90 days	5 (23%)

TABLE II. Procedure Characteristics

	$N = 22$ (%)
Culprit vessel	
ICA-T	10 (46)
MCA-M1	5 (23)
MCA-M2	5 (23)
Basilar	1 (4)
Normal	1 (4)

TABLE III. Patient Outcomes When Merci Retriever Used

	$N = 17$ (%)
Recanalization successful	15 (88)
TIMI 2 flow	3 (20)
TIMI 3 flow	12 (80)
Good outcome at 90 days (MRS ≤2)	10 (59)
Mortality at 90 days	4 (23.5)
Mortality at 90 days if recanalized	2 (13.3)
Stay in ICU (days) (mean and range)	3.2 (2–9)
Stay in hospital (days)	9.7 (4–24)
Total hospital cost (US$) (mean)	$13 800

TABLE IV. Patient Outcomes When Recanalization Failed or Not Attempted

	$N = 7$ (%)
Baseline and post procedure flow	
TIMI flow 0	5 (71)
TIMI flow 1	1 (14)
TIMI flow 3	1 (14)
Good outcome at 90 days (MRS ≤2)	1 (14)
Mortality at 90 days	3 (42)

Decisions regarding repeat head CT or MR scans were made on clinical grounds and were not routinely done. All surviving patients were examined at 90 days by the referring stroke physician and their modified Rankin

N=84

J Am Coll Cardiol. 2015 Jul 28;66(4):487-8

Table 1: Baseline characteristics, time delays and outcomes.

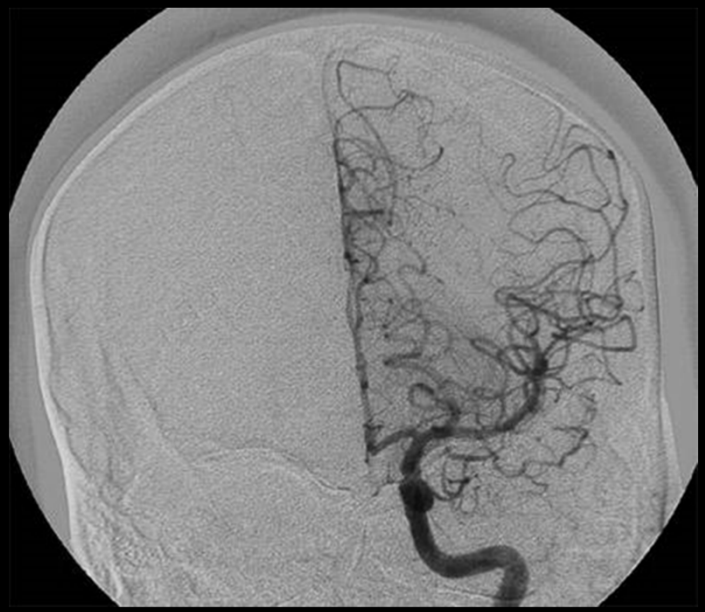
Baseline characteristics	
Females	37 (44%)
Nr. of anterior vs. posterior strokes	82 vs. 2
Mean age [years ± SD]	64.8±13.8
Diabetes mellitus	25 (30%)
History of hypertension	63 (75%)
Clinical evidence of atherosclerosis	37 (44%)
Atrial fibrillation (any type, any time)	34 (40%)
History of stroke or TIA	9 (11%)
Admission NIHSS [mean ± SD]	18.0±4.1 (range 6-27, median 18)
Time delays - median values (IQR) in minutes	
Stroke onset – CT	90 (90)
CT – sheath insertion	64 (65)
Sheath insertion – recanalization	53 (29)
Stroke onset – sheath insertion	165 (165)
Stroke onset – recanalization	236 (140)
Outcomes	
Intubation / general anesthesia use (%)	28%
Recanalization rate (TICI 2a/3 flow, %)	74%
Good neurologic outcome at 90 days (mRS≤2, %)	42%
90-days mortality	32%
Symptomatic intracranial hemorrhage at 7 days (%)	14%

Why cardiologists can help

- Because we are more numerous
- Far more interventional cardiologists available
- In South Africa – 12 INR/S vs 110 cardiologist
- In USA – 400 INR/S vs 8000 cardiologists
- Cardiologists daily work – being available 24/7 for acute myocardial infarction, disrupting booked patients, sleep etc. It's what we do and are used to

Why cardiologists can help

- Because we can do the procedure with minimal training
- It is not a technically difficult procedure at all compared to a lot of the coronary work we do!



In Conclusion

- This should not be a turf war
- Cardiologists are not looking for more work
- But … as part of a well organised stroke unit team we can safely perform a potentially life saving procedure in the absence of a classically trained neuro-interventionalist

Cardiologists stand around as no neuro-interventionalist available

“We are not trained to fight house fires (brain attacks) – only bush fires(heart attacks)!”

Patient has a poor outcome!


BRAIN ATTACKS
The future of stroke therapy will parallel the evolution of treatment of STEMI, recognizing that early reperfusion is critical to success.
Ochsner