The Real World of Endovascular Stroke Treatment in a Tertiary Hospital

DR JAMES WINTON

ACEM ASM 2018

Let me tell you a story…..

*Not actually Betty

Mechanical Thrombectomy

Acute Stroke Treatment in 2018

Supportive Care/Stroke Unit Care

Thrombolysis

Mechanical Thrombectomy

The Skeptics' Guide to EM

MEET 'EM, GREET 'EM, TREAT 'EM AND STREET 'EM

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Home » Conferences » Thrombolysis for Acute Stroke

Thrombolysis for Acute Stroke

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As you know, the BEEM Team of Drs. Crocco, Milne and Upadhye was in Sweden last month for SweetBEEM. This was one of the best BEEM trips ever for a variety of reasons.

Members of BEEM were asked to speak at their National Emergency Medicine conference while in Stockholm. I was

SGEM

H.o.P

http://thesgem.com/2014/04/thrombolysis-for-acute-stroke/

ACEM Position Statement

"intravenous thrombolysis as an intervention for acute stroke, administered to selected patients within three hours of symptom onset, may increase the odds of a better functional outcome, while at the same time increasing the risk of intracranial haemorrhage and conferring no mortality benefit".

Mechanical Thrombectomy Evidence

MR CLEAN

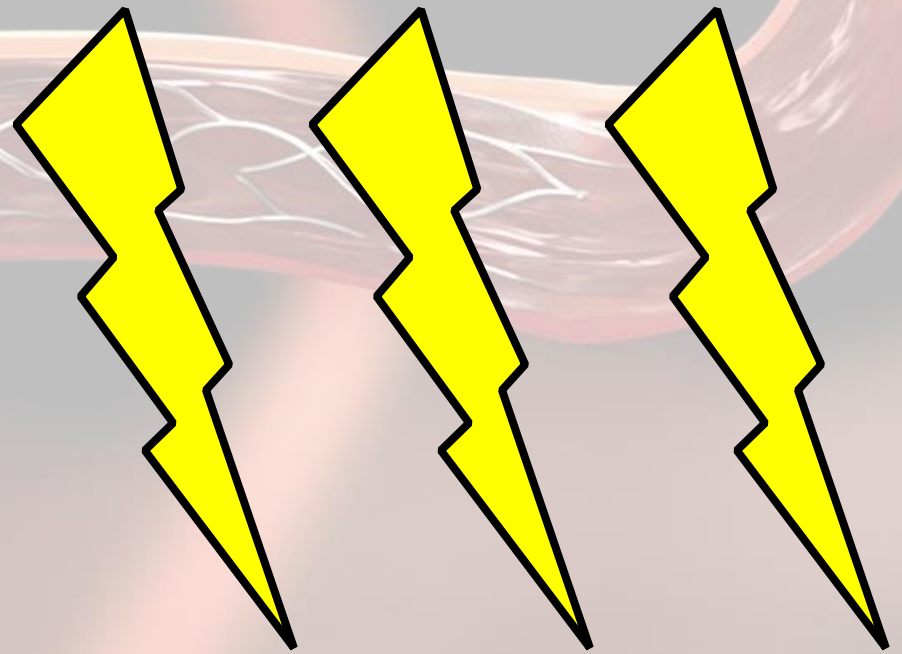
EXTEND IA
ESCAPE
SWIFT-PRIME
REVASCAT

HERMES

Good Functional Outcome
mRS 0 - 2 at 90 days

46% Thrombectomy
27% Control

“STROKE CALL”



ORIGINAL RESEARCH

Mechanical thrombectomy for anterior circulation stroke: 5-year experience in a statewide service with differences in pretreatment time metrics across two hospitals sites

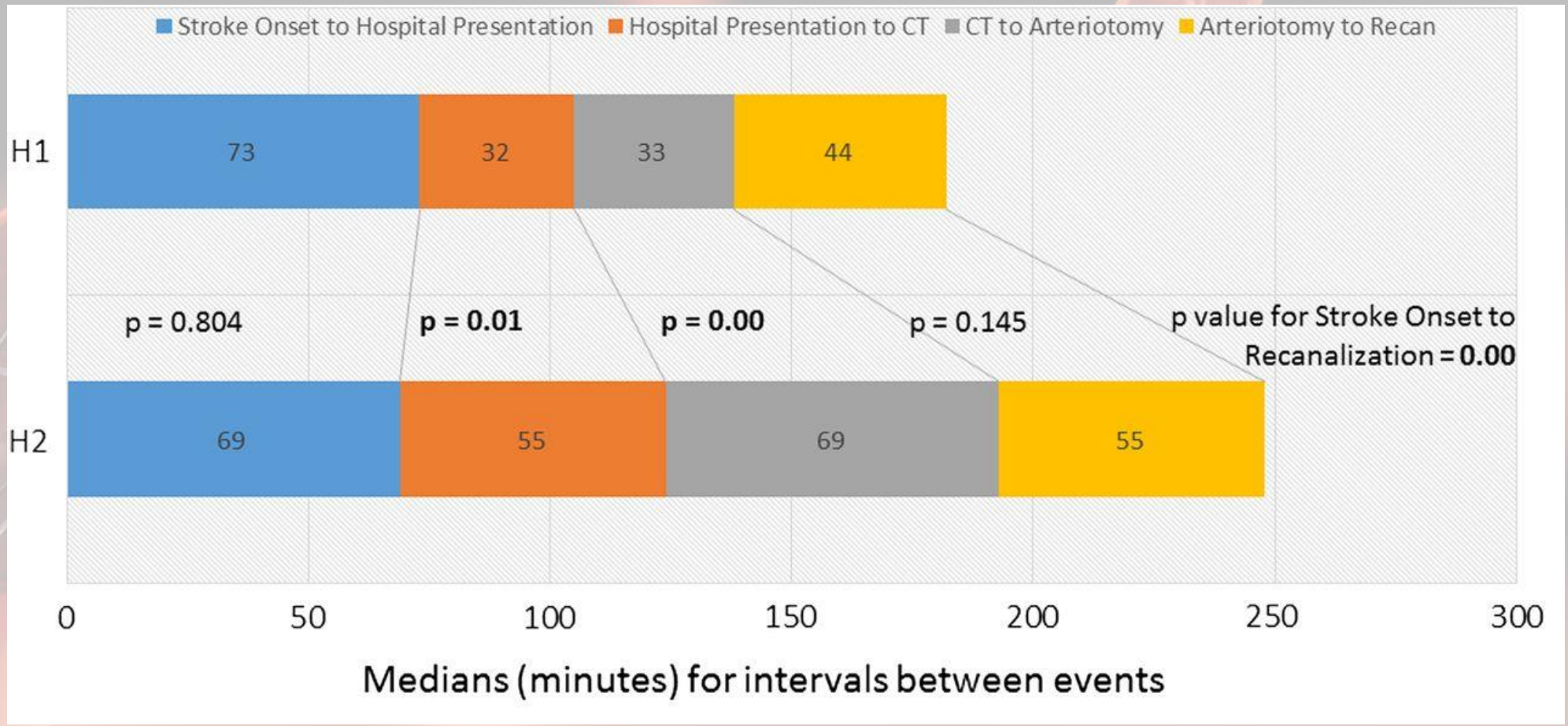
Ruchi Kabra,[1] Timothy J Phillips,[1] Jacqui-Lyn Saw,[2] Constantine C Phatouros,[1] Tejinder P Singh,[1] Graeme J Hankey,[3] David Blacker,[3] Darshan Ghia,[2] David Prentice,[2] William McAuliffe[1]

Kabra R, Phillips TJ, Saw J-L, *et al*. *J NeuroIntervent Surg* 2017;**9**:535–540.

NIISwa vs RCT’s

49% vs 46%

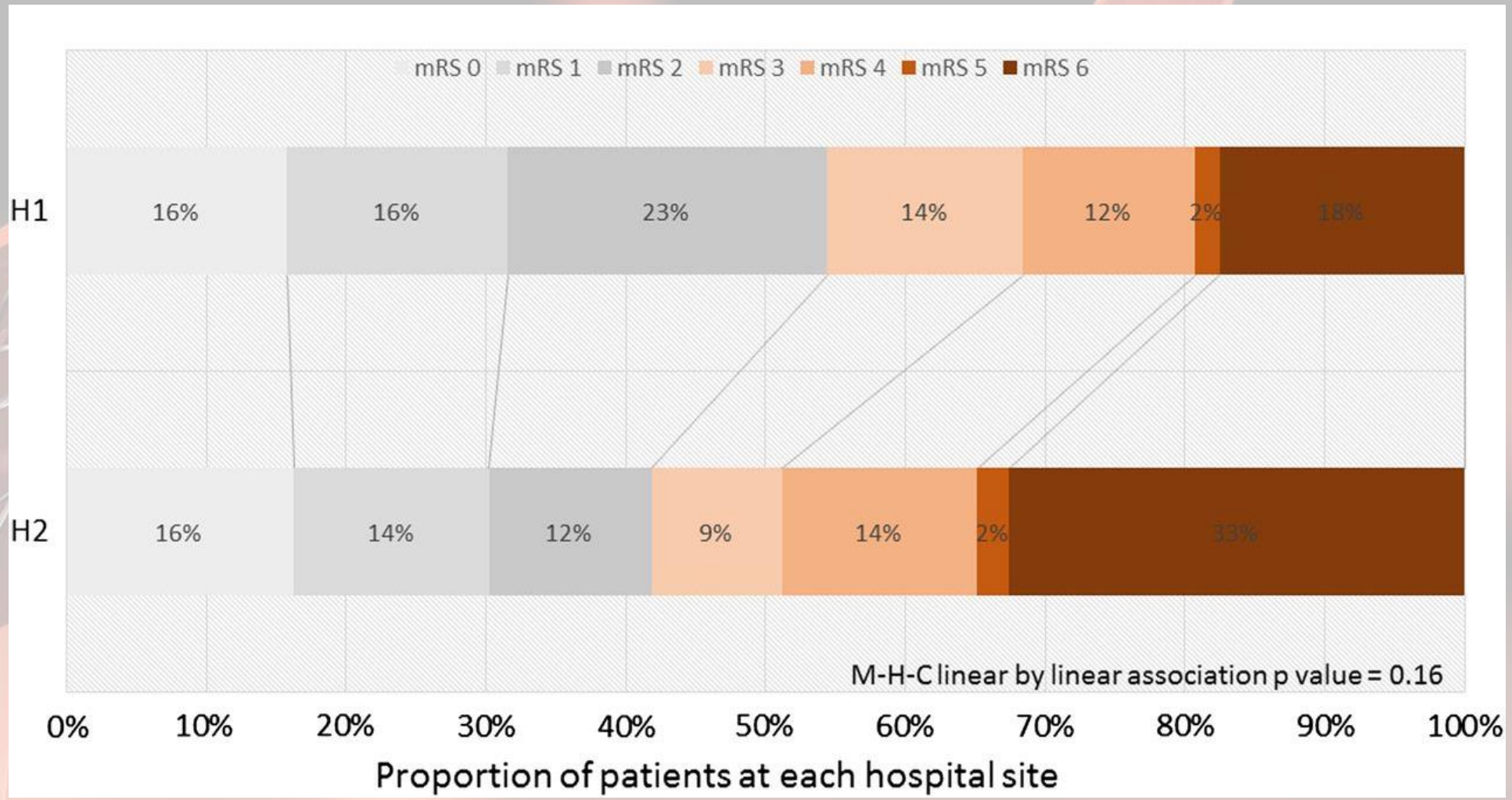
Median times between stroke onset, hospital presentation, CT, arteriotomy, and recanalization; for hospitals 1 and 2.



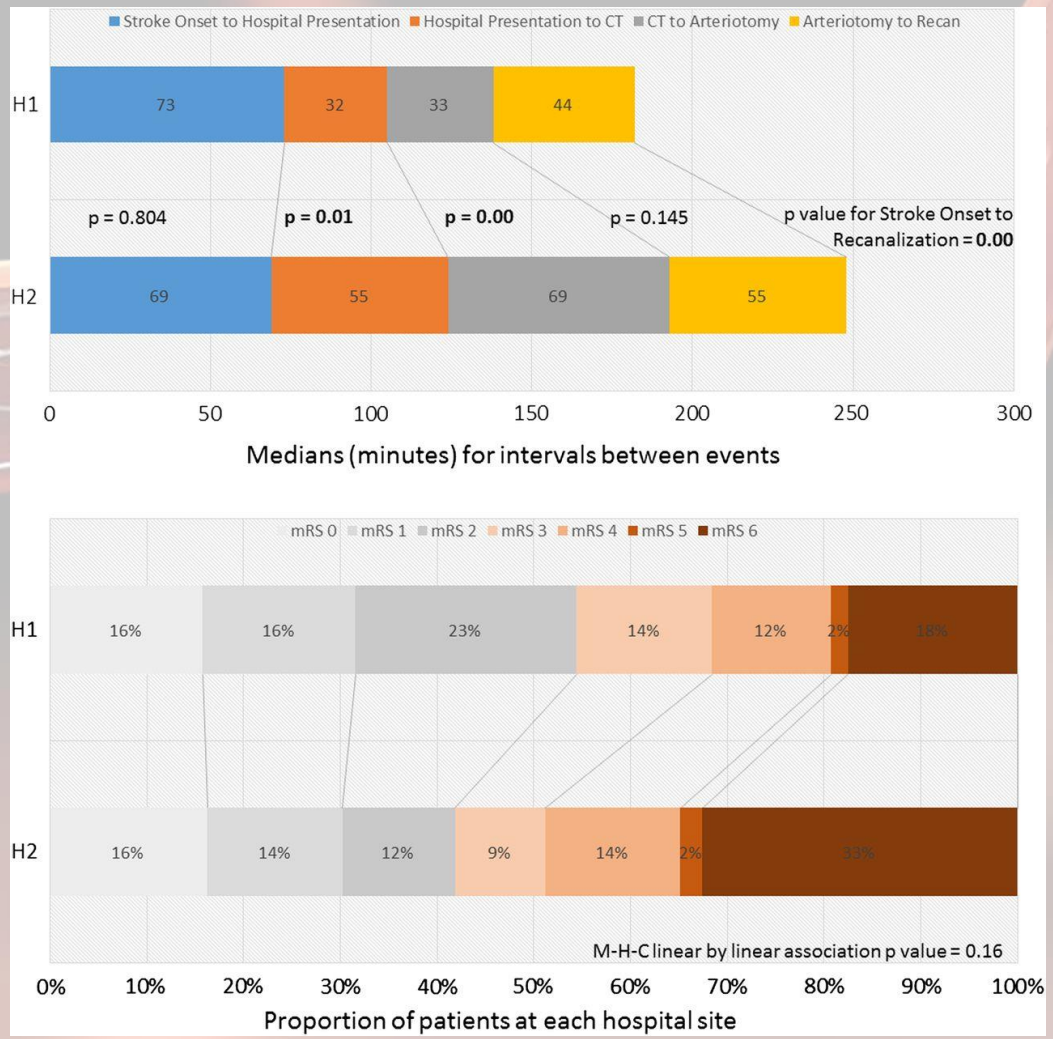
Modified Rankin Scale

Score	Definition
0	No symptoms
1	No significant disability. Able to carry out all usual activities, despite some symptoms
2	Slight disability. Able to look after own affairs without assistance, but unable to carry out all previous activities
3	Moderate disability. Requires some help, but able to walk unassisted
4	Moderately severe disability. Unable to attend to own bodily needs without assistance, and unable to walk unassisted
5	Severe disability. Requires constant nursing care and attention, bedridden, incontinent
6	Dead

Proportional distribution of modified Rankin Scale (mRS) scores for both hospitals.



(A) Median times between stroke onset, hospital presentation, CT, arteriotomy, and recanalization; for hospitals 1 and 2.



Time

Outcome

Ruchi Kabra et al. J NeuroIntervent Surg 2017;9:535-540

How to Develop a Clinical Pathway

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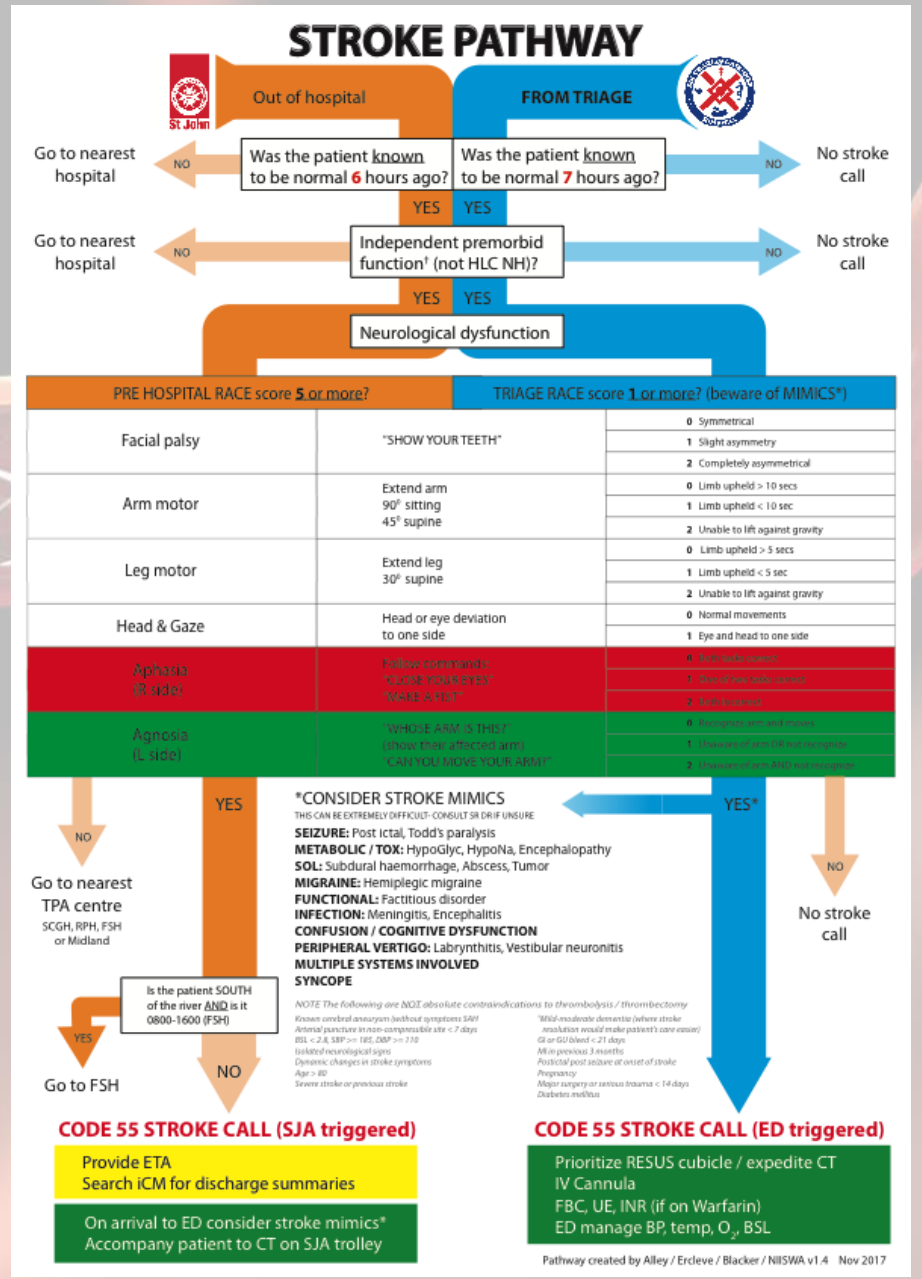
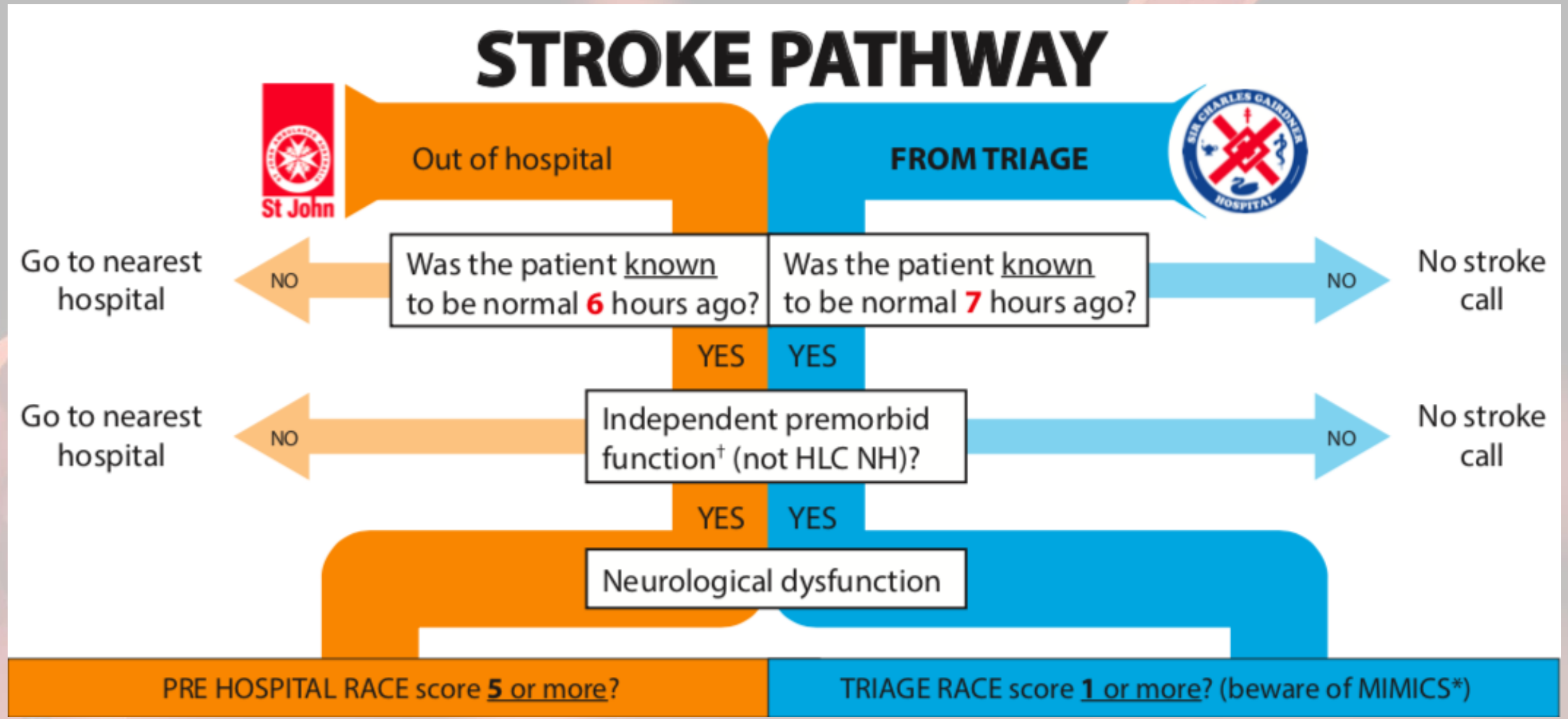
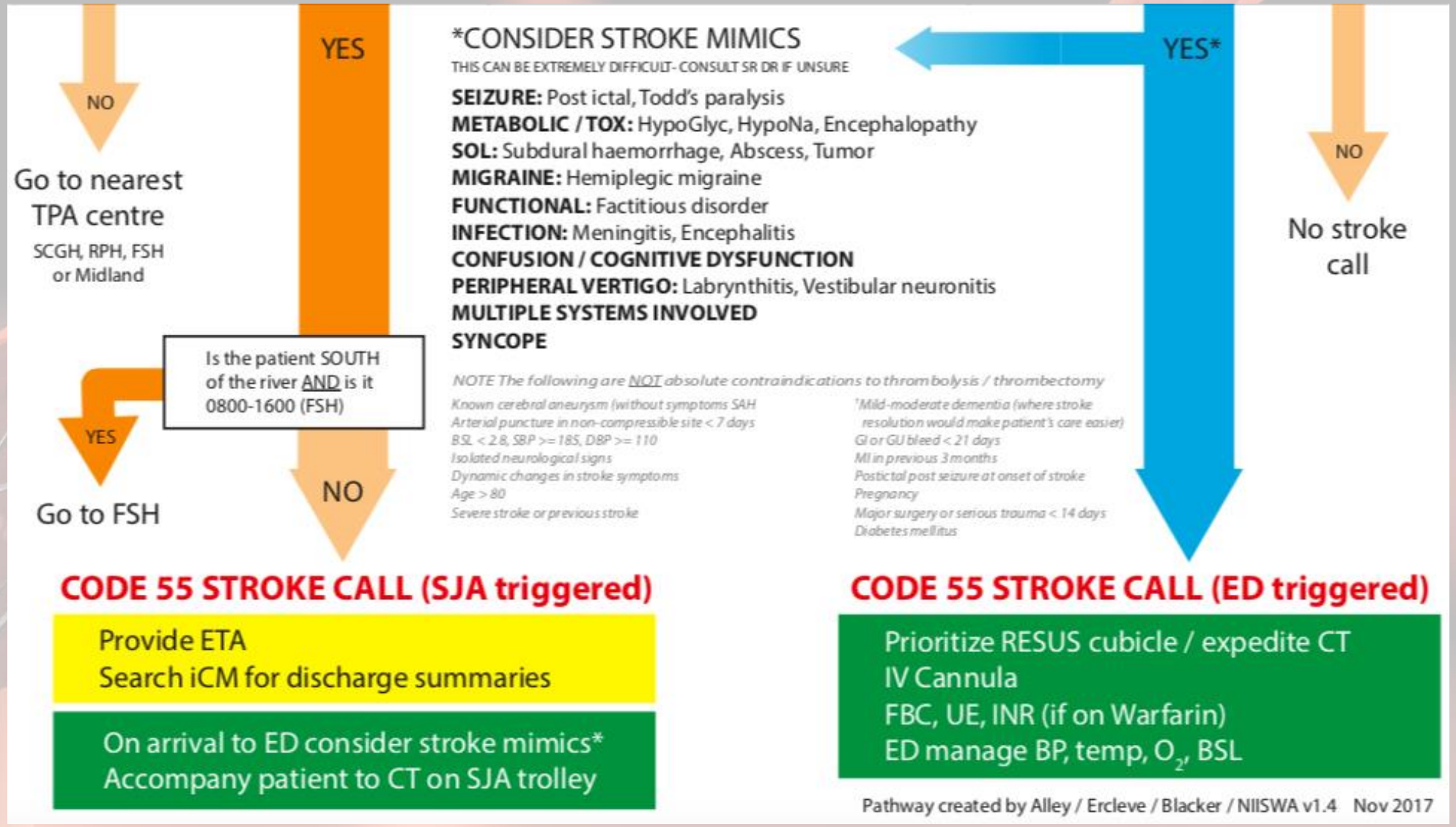

STROKE PATHWAY
Out of hospital
FROM TRIAGE
Was the patient known to be normal 6 hours ago?
Was the patient known to be normal 7 hours ago?
Go to nearest hospital
No stroke call
NO
YES
Independent premorbid function† (not HLC NH)?
Neurological dysfunction
PRE HOSPITAL RACE score 5 or more?
TRIAGE RACE score 1 or more? (beware of MIMICS*)
Facial palsy
"SHOW YOUR TEETH"
0 Symmetrical
1 Slight asymmetry
2 Completely asymmetrical
Arm motor
Extend arm 90° sitting 45° supine
0 Limb upheld > 10 secs
1 Limb upheld < 10 sec
2 Unable to lift against gravity
Leg motor
Extend leg 30° supine
0 Limb upheld > 5 secs
1 Limb upheld < 5 sec
2 Unable to lift against gravity
Head & Gaze
Head or eye deviation to one side
0 Normal movements
1 Eye and head to one side
Aphasia (R side)
Follow commands: "CLOSE YOUR EYES" "MAKE A FIST"
Agnosia (L side)
"WHOSE ARM IS THIS?" (show their affected arm) "CAN YOU MOVE YOUR ARM?"
Go to nearest TPA centre
SCGH, RPH, FSH or Midland
Is the patient SOUTH of the river AND is it 0800-1600 (FSH)
Go to FSH
*CONSIDER STROKE MIMICS
THIS CAN BE EXTREMELY DIFFICULT- CONSULT SR DR IF UNSURE
SEIZURE: Post ictal, Todd's paralysis
METABOLIC / TOX: HypoGlyc, HypoNa, Encephalopathy
SOL: Subdural haemorrhage, Abscess, Tumor
MIGRAINE: Hemiplegic migraine
FUNCTIONAL: Factitious disorder
INFECTION: Meningitis, Encephalitis
CONFUSION / COGNITIVE DYSFUNCTION
PERIPHERAL VERTIGO: Labrynthitis, Vestibular neuronitis
MULTIPLE SYSTEMS INVOLVED
SYNCOPE
NOTE The following are NOT absolute contraindications to thrombolysis / thrombectomy
Known cerebral aneurysm (without symptoms) SAH
Arterial puncture in non-compressible site < 7 days
BSL < 2.8, SBP >= 185, DBP >= 110
Isolated neurological signs
Dynamic changes in stroke symptoms
Age > 80
Severe stroke or previous stroke
Mild-moderate dementia (where stroke resolution would make patient's care easier)
GI or GU bleed < 21 days
MI in previous 3 months
Postictal post seizure at onset of stroke
Pregnancy
Major surgery or serious trauma < 14 days
Diabetes mellitus
No stroke call
CODE 55 STROKE CALL (SJA triggered)
Provide ETA
Search iCM for discharge summaries
On arrival to ED consider stroke mimics*
Accompany patient to CT on SJA trolley
CODE 55 STROKE CALL (ED triggered)
Prioritize RESUS cubicle / expedite CT
IV Cannula
FBC, UE, INR (if on Warfarin)
ED manage BP, temp, O2, BSL
Pathway created by Alley / Ercleve / Blacker / NIISWA v1.4 Nov 2017

STROKE PATHWAY



PRE HOSPITAL RACE score **5** or more?		TRIAGE RACE score **1** or more? (beware of MIMICS*)
Facial palsy	"SHOW YOUR TEETH"	**0** Symmetrical
		1 Slight asymmetry
		2 Completely asymmetrical
Arm motor	Extend arm 90⁰ sitting 45⁰ supine	**0** Limb upheld > 10 secs
		1 Limb upheld < 10 sec
		2 Unable to lift against gravity
Leg motor	Extend leg 30⁰ supine	**0** Limb upheld > 5 secs
		1 Limb upheld < 5 sec
		2 Unable to lift against gravity
Head & Gaze	Head or eye deviation to one side	**0** Normal movements
		1 Eye and head to one side
Aphasia (R side)	Follow commands: "CLOSE YOUR EYES" "MAKE A FIST"	**0** Both tasks correct
		1 One of two tasks correct
		2 Both incorrect
Agnosia (L side)	"WHOSE ARM IS THIS?" (show their affected arm) "CAN YOU MOVE YOUR ARM?"	**0** Recognize arm and moves
		1 Unaware of arm OR not recognize
		2 Unaware of arm AND not recognize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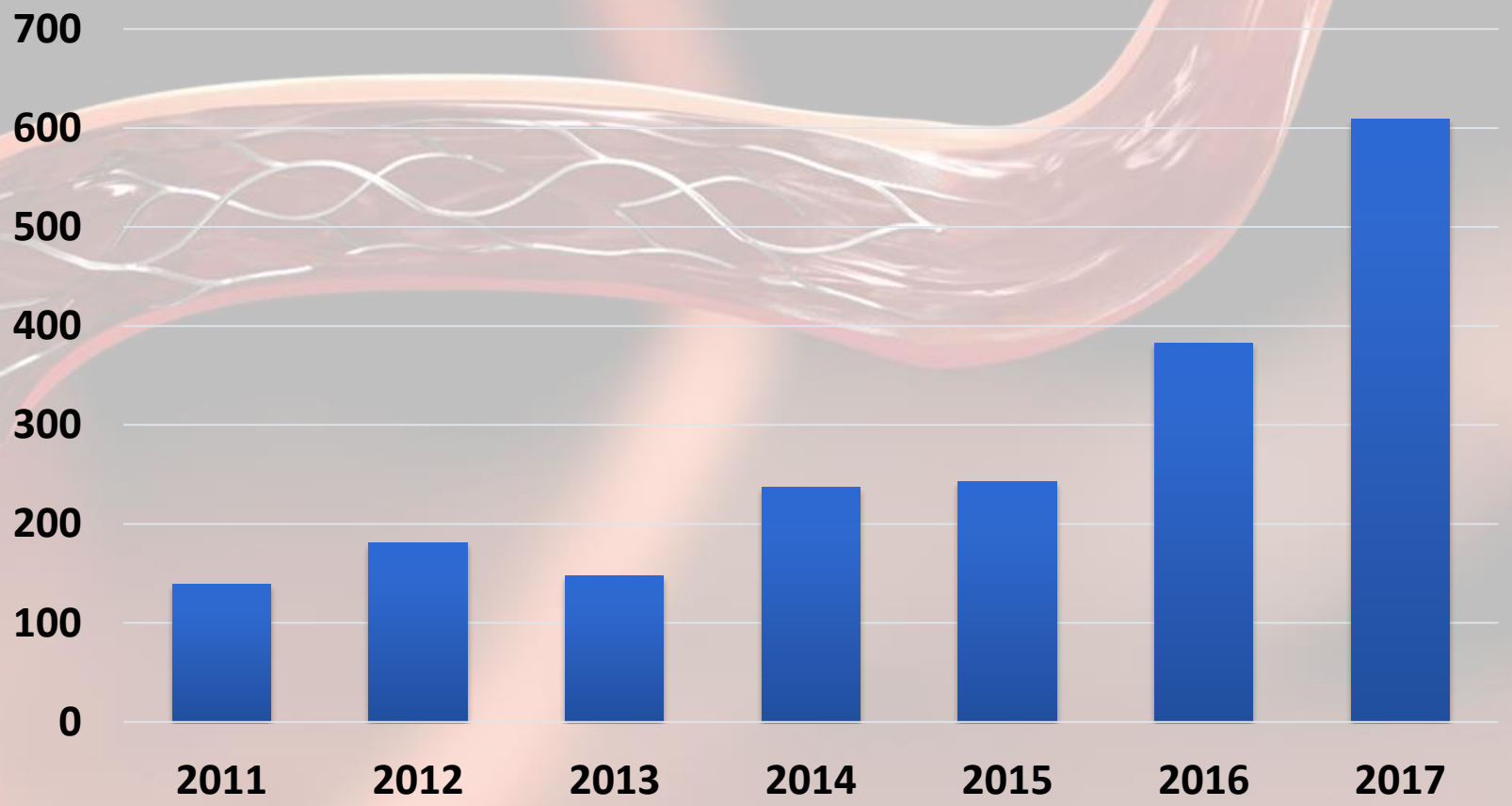
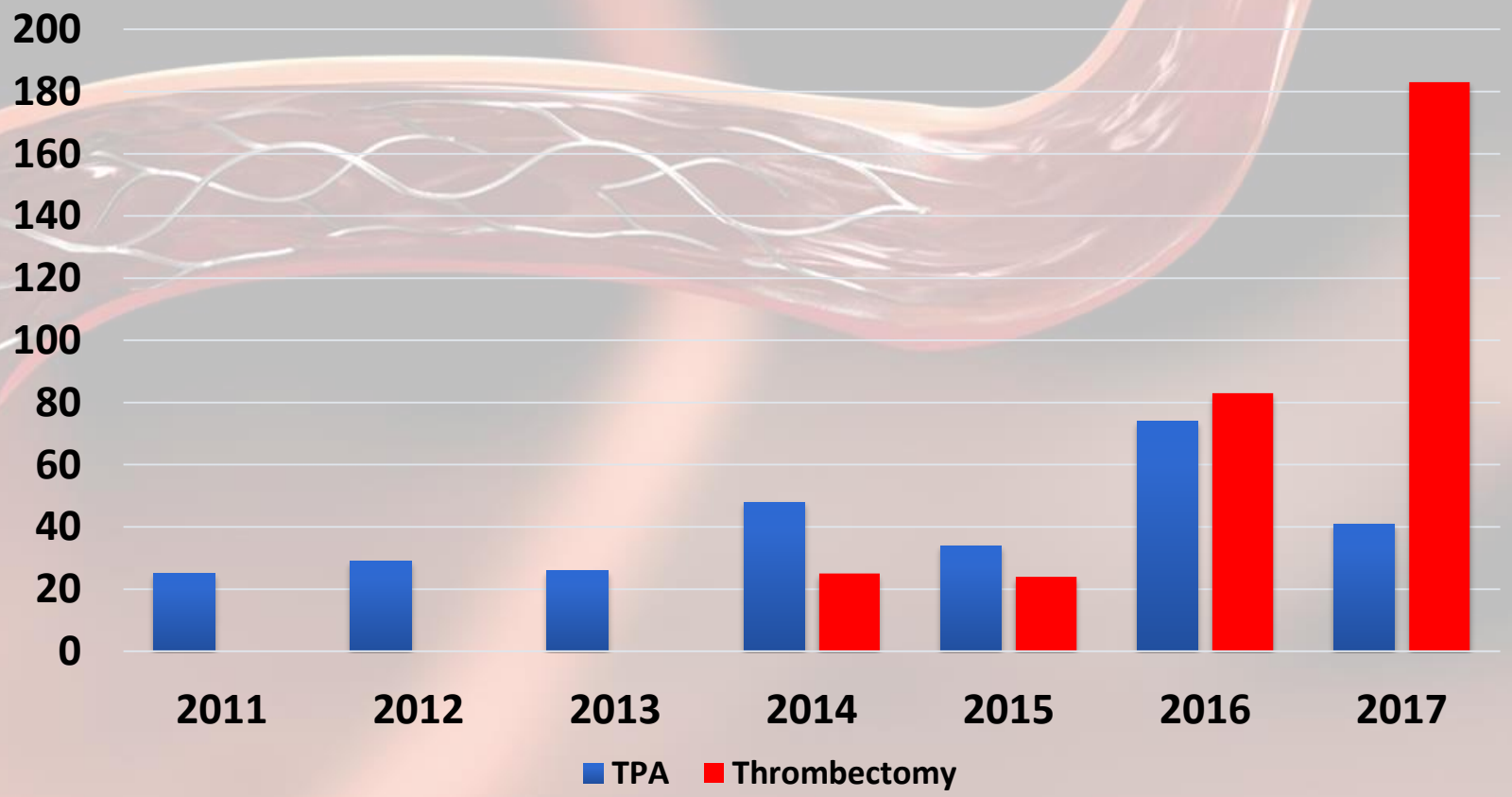
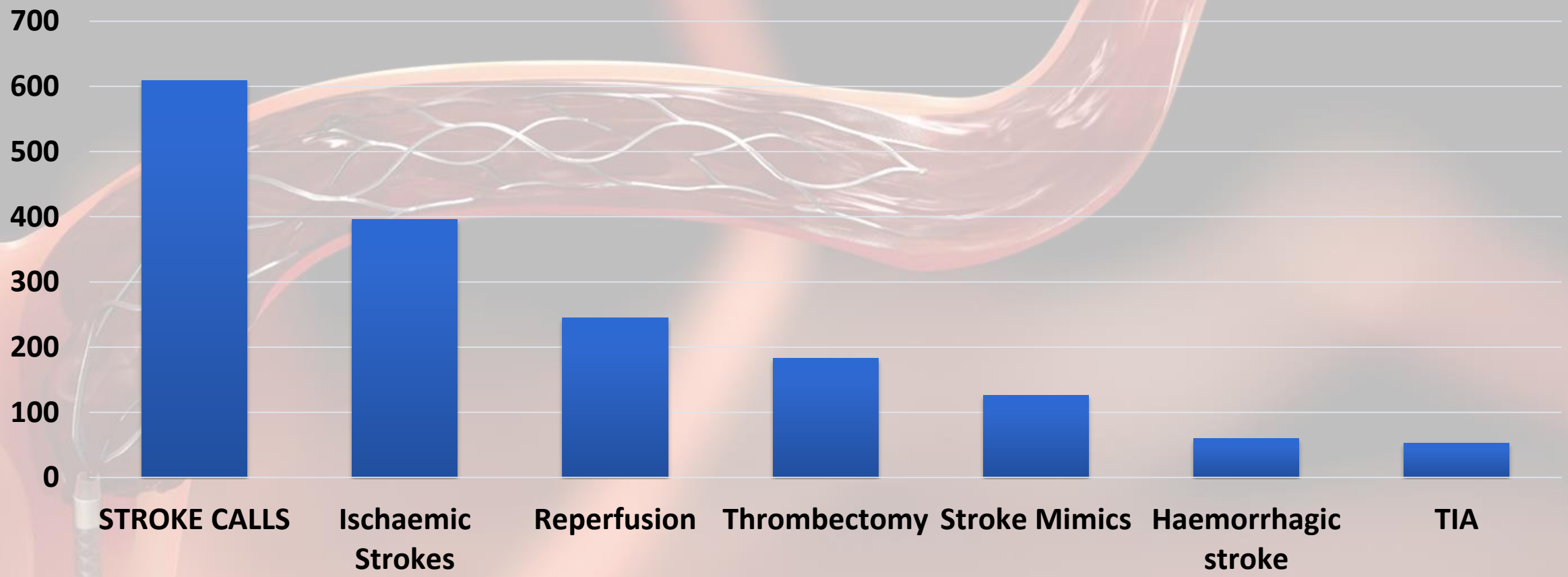
SCGH TOTAL STROKE CALLS



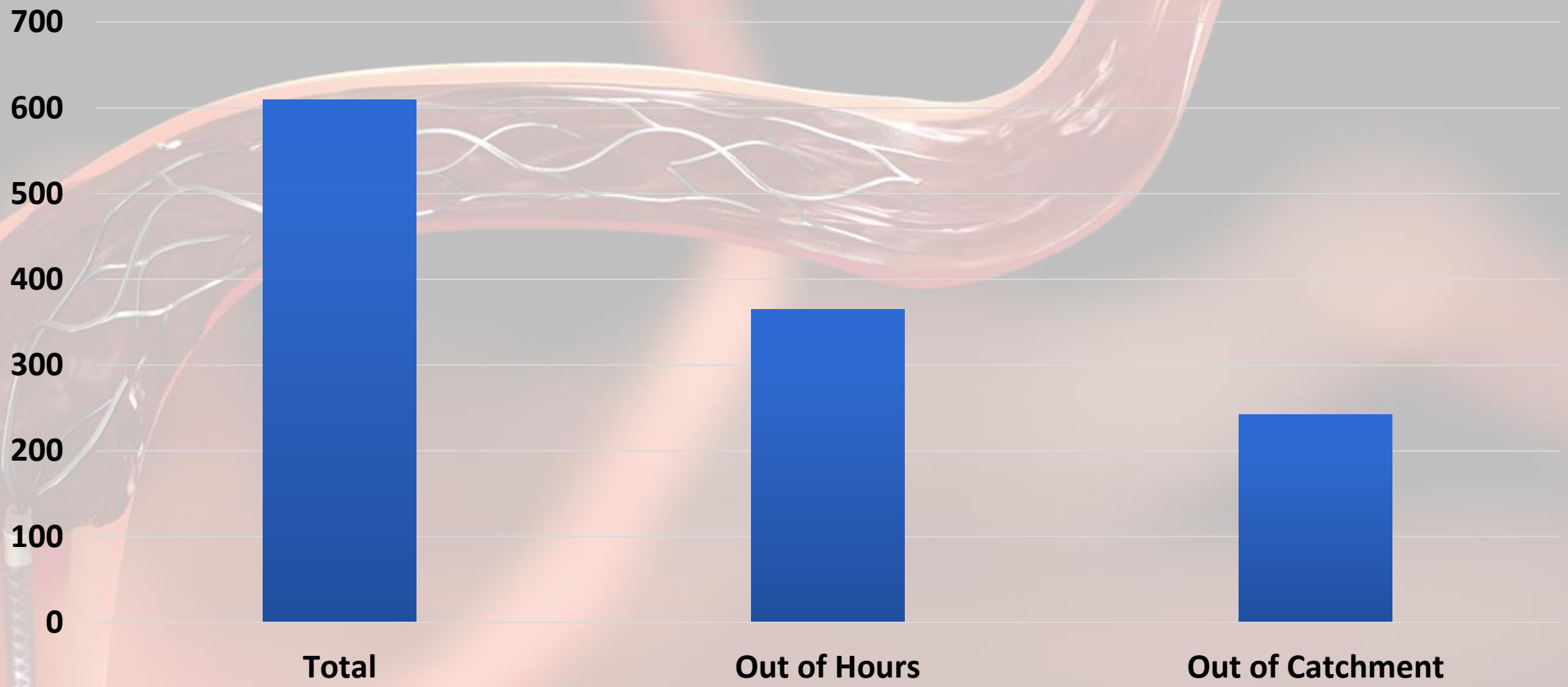
REPERFUSION THERAPY



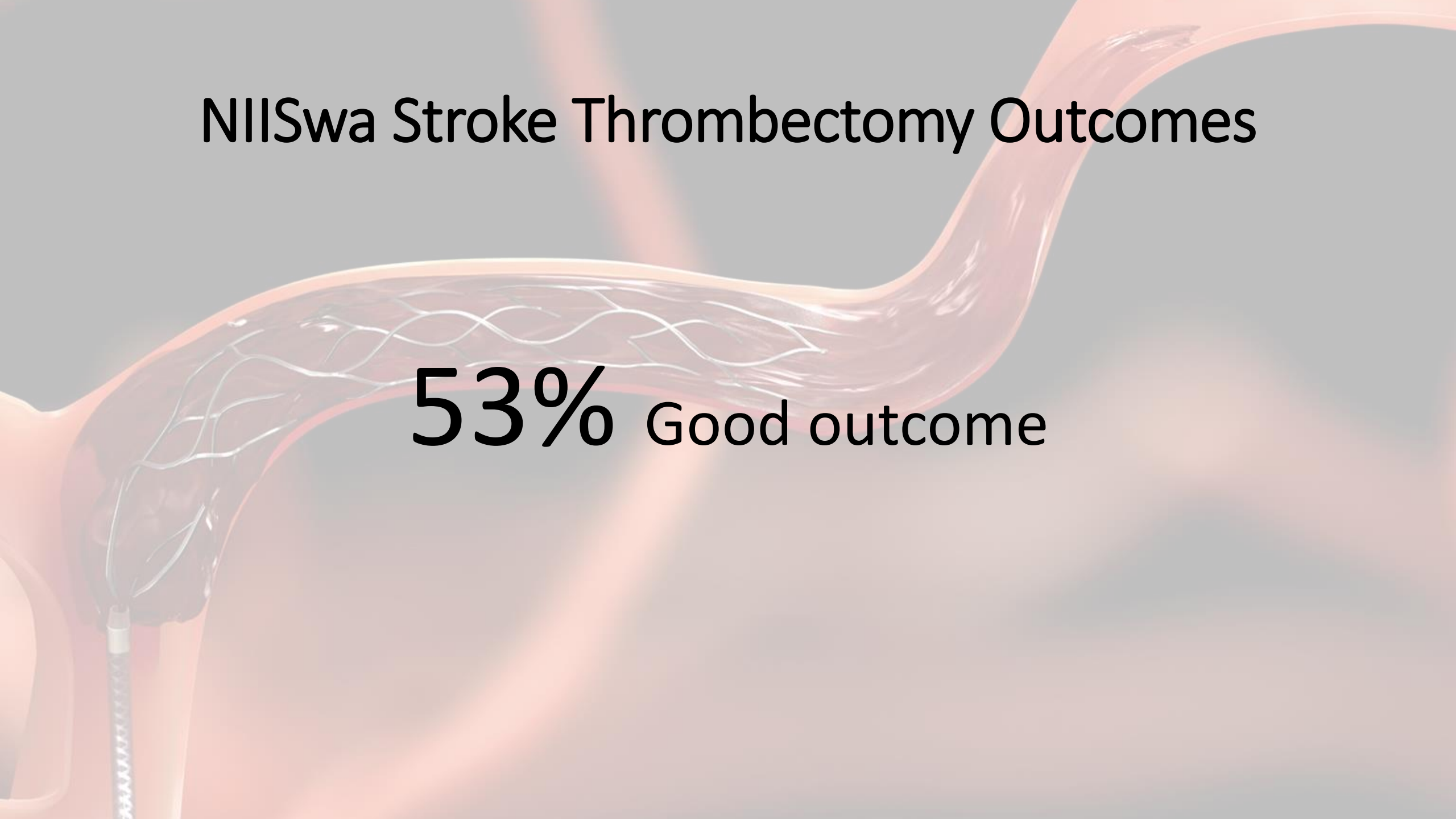
SCGH Stroke Calls 2017



SCGH Stroke Calls 2017



NIISwa Stroke Thrombectomy Outcomes



53% Good outcome

Real World Issues

Increased ED workload

Unseen consequences

Service provision – Anaesthetics/ICU

Neurology workload

Communication between stakeholders

Evolving evidence

Interdepartmental collaboration


ICTUS@1515
ED@1743
NC CT@1809
FINAL CT@1815
ANGIO SUITE@1920
GA@1935
RADIAL PUNCTURE@1942
1x ASPIRATION PASS
RECAN@1955
ICTUS-->RECAN 4Hrs 40min

Acknowledgements

- David Blacker
- Belinda Saint
- Albert Chiu
- Tor Ercleve
- Peter Allely