

## Edges of Patient Selection for Stroke Thrombectomy: Low NIHSS and Large Core

*Demetrius Lopes*

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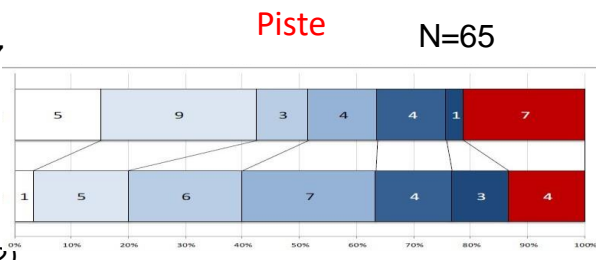
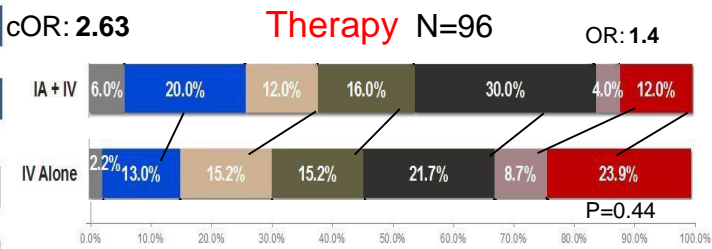
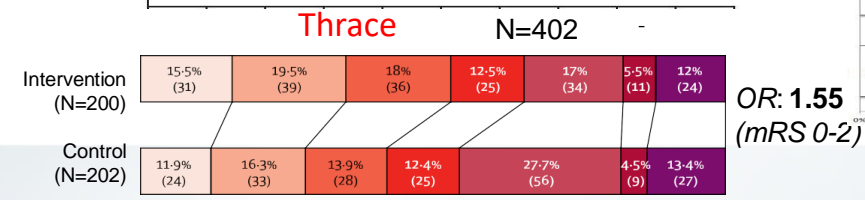
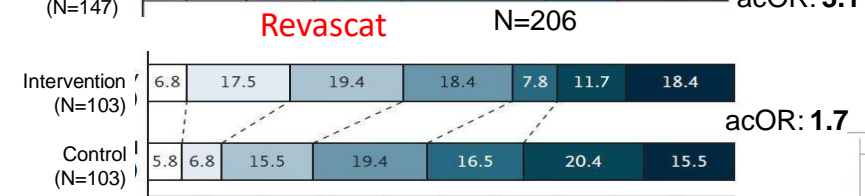
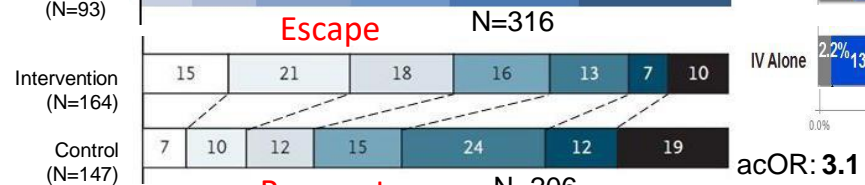
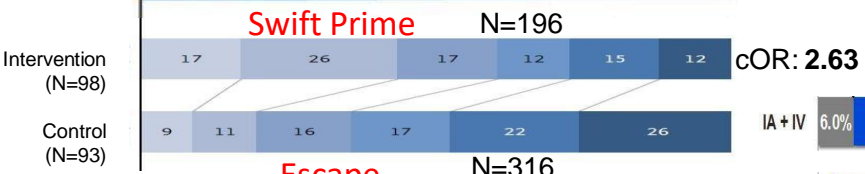
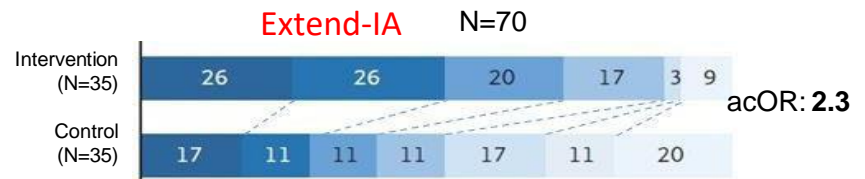
# Disclosure Statement of Financial Interest

**I, (Demetrius Lopes), DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.**

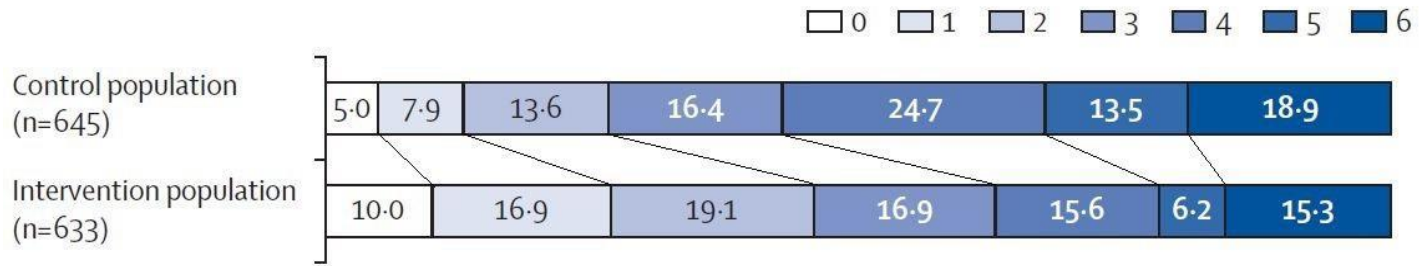
*All TCT 2018 faculty disclosures are listed online and on the App.*

# Objectives

- Describe **unresolved issues** in mechanical thrombectomy
- Understand **ongoing and future research** to solve issues



# HERMES



Adjusted cOR 2.49

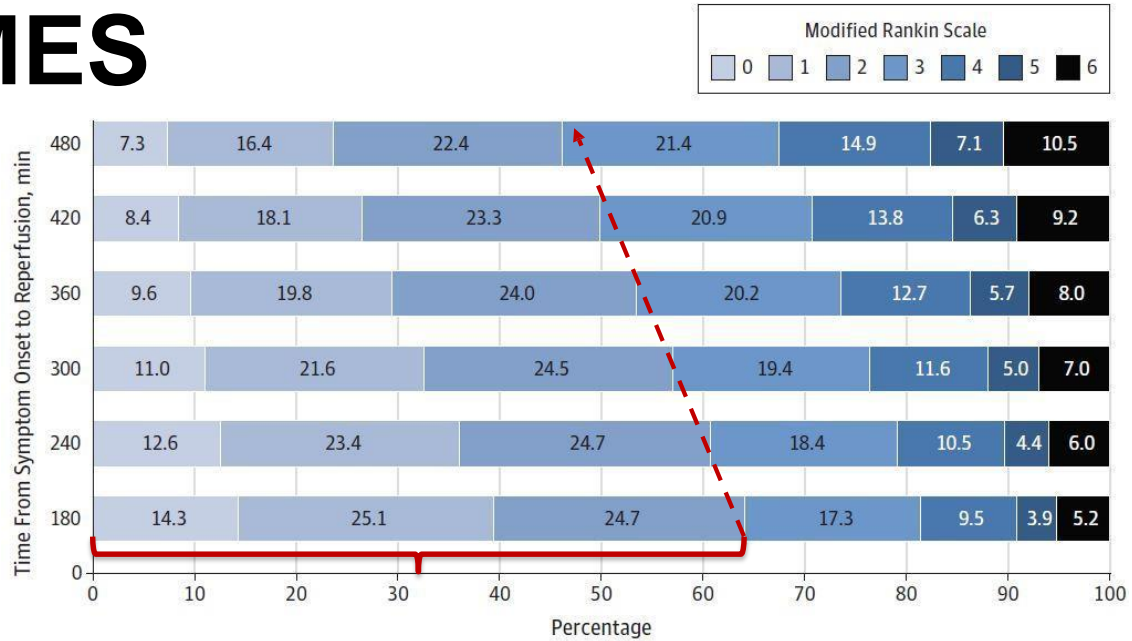
NNT 2.6!

Endovascular thrombectomy after large-vessel ischaemic stroke: a meta-analysis of individual patient data from five randomised trials. Goyal M, Menon BK, van Zwam WH, Dippel DW, Mitchell PJ, Demchuk AM, et al. **Lancet**. 2016 Apr 23;387(10029):1723-31

Time to Treatment With Endovascular Thrombectomy and Outcomes From Ischemic Stroke: A Meta-analysis. Jeffrey L. Saver, MD; Mayank Goyal, MD; Aad van der Lugt, et al. **JAMA**. 2016;316(12):1279-1288

P=0.001

# HERMES



mRS 0-2

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## What we know now...

- Mechanical Thrombectomy is effective against AIS-LVO
- Baseline collateral flow predicts successful reperfusion and response to therapy

**There are many unresolved issues...**

## Unresolved issues in mechanical thrombectomy

1. **Pre hospital screening** - Go to the right level of care
2. **Neuroprotection** – Save brain
3. **Blood clot characteristics** – Choose the right tool/technique
4. **Aspiration vs. Stent retriever** - Technique standardization
5. **Anesthesia GA vs Sedation**
6. **Defining indication:** LOW NIHSS and LARGE CORE
7. **Skip IVtPa** – Workflow
8. **Extension of LVO** – Go after more distal lesions M3/4, P3/4, A3/4



# Preliminary data suggests benefit for intervention in LOW NIHSS

Too good to intervene? Thrombectomy for large vessel occlusion strokes with minimal symptoms: an intention-to-treat analysis

Diogo C Haussen, Mehdi Bousslama, Jonathan A Grossberg, Aaron Anderson, Samir Belagage, Michael Frankel, Nicolas Bianchi, Leticia C Rebello, Raul G Nogueira

*J NeuroIntervent Surg* 2016;0:1–5. doi:10.1136/neurintsurg-2016-012633

*Too good to intervene?*  
*J NeuroIntervent Surg 2016;0:1–5*

**CONCLUSIONS:**

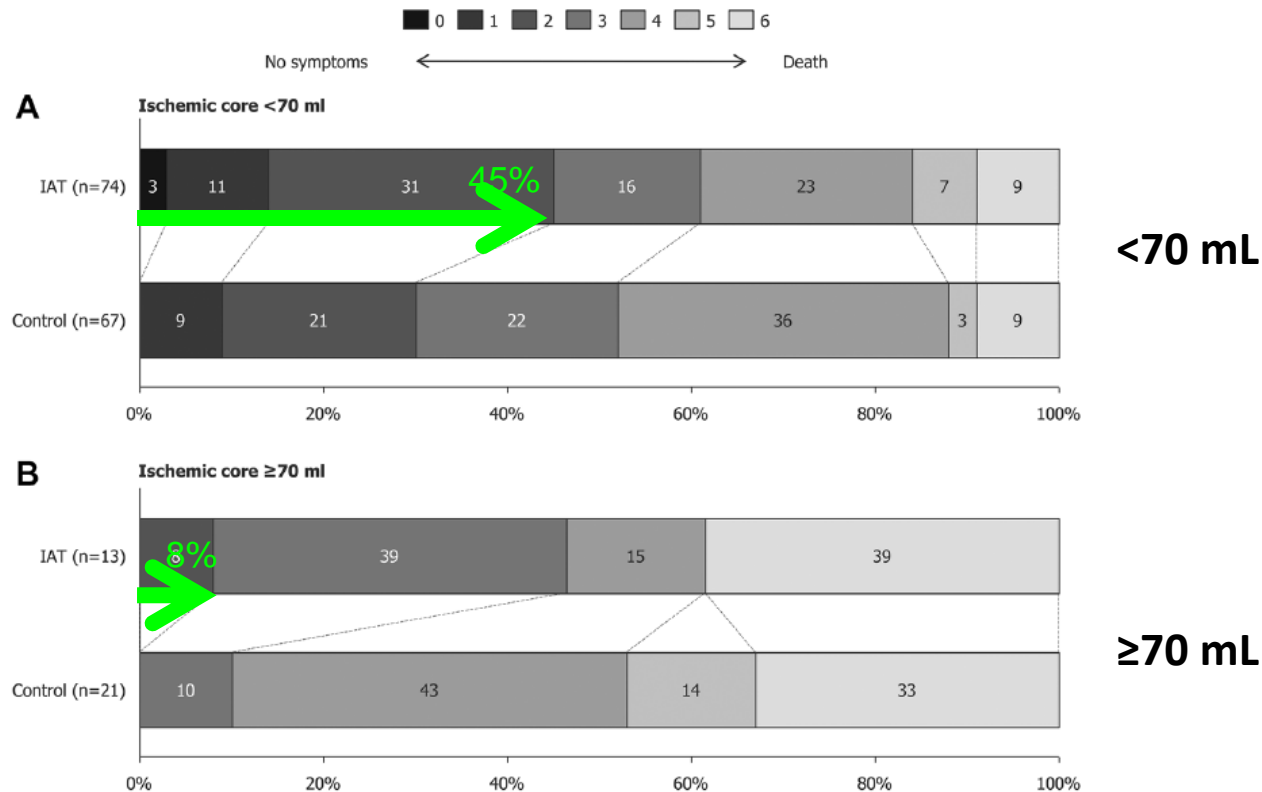
Thrombectomy led to a shift towards a lower NIHSS in patients with LVO presenting with minimal stroke symptoms. **Despite the overall perception that this condition is benign, nearly a quarter of patients primarily treated with medical therapy did not achieve independence at 90 days.**

# LOW NIHSS thrombectomy

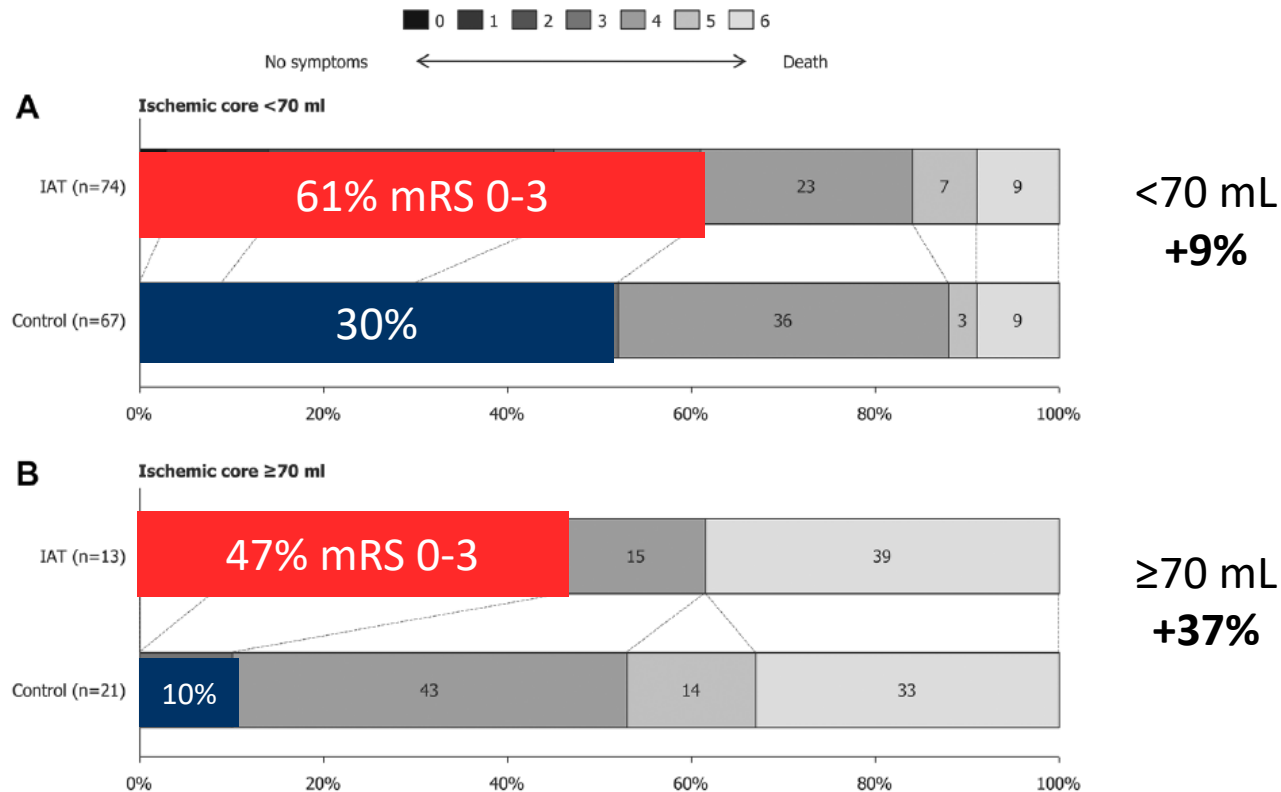
- RCT needed to answer
- European trial funded – more to come

Preliminary data suggests benefit for  
intervention in Large Core

# Ischemic core volume and outcome in MR Clean



# Ischemic core volume and outcome in MR Clean



# Preliminary data suggests benefit for intervention in Large Core

**Imaging features and safety and efficacy of endovascular stroke treatment: a meta-analysis of individual patient-level data**

**Lancet Neurol 2018; 17: 895–904**

Luis San Román\*, Bijoy K Menon\*, Jordi Blasco, María Hernández-Pérez, Antoni Dávalos, Charles B L M Majoie, Bruce C V Campbell, Francis Guillemin, Hester Lingsma, René Anxionnat, Jonathan Epstein, Jeffrey L Saver, Henk Marquering, John H Wong, **Demetrius Lopes**, Gernot Reimann, Hubert Desal, Diederik W J Dippel, Shelagh Coutts, Richard du Mesnil de Rochemont, Dileep Yavagal, Jean Christophe Ferre, Yvo B W E M Roos, David S Liebeskind, Robert Lenthall, Carlos Molina, Fahad S Al Ajan, Vivek Reddy, Dar Dowlatshahi, Sourour Nader-Antoine, Catherine Oppenheim, Alim P Mitha, Stephen M Davis, Christian Weimar, Robert J van Oostenbrugge, Erik Cobo, Timothy J Kleinig, Geoffrey A Donnan, Aad van der Lugt, Andrew M Demchuk, Olvert A Berkhemer, Anna M M Boers, Gary A Ford, Keith W Muir, B Scott Brown, Tudor Jovin, Wim H van Zwam, Peter J Mitchell, Michael D Hill, Phil White, Serge Bracard, Mayank Goyal, on behalf of the HERMES collaborators†

# Lancet Neurol 2018; 17: 895–904

## Conclusion:

EVT achieves better outcomes at 90 days than standard medical therapy across a broad range of baseline imaging categories, including infarcts affecting more than 33% of middle cerebral artery territory or ASPECTS less than 6, although in these patients the risk of symptomatic intracranial haemorrhage was higher in the EVT group than the control group. This analysis provides preliminary evidence for potential use of EVT in patients with large infarcts at baseline.



# Efficacy and Safety of Thrombectomy in Stroke With Extended Lesion and Extended Time Window (Tension)

- **TENSION** (Efficacy and safety of Thrombectomy in Stroke with extended lesion and extended time window) is a prospective, open label, blinded endpoint (PROBE), European two-arm, randomized, controlled, post-market study to compare the safety and effectiveness of endovascular thrombectomy as compared to best medical care alone in the treatment of acute ischemic stroke patients with extended stroke lesions defined by an Alberta Stroke Program Early CT Score (ASPECTS) score of 3-5 and in an extended time window (up to 12 hours or unknown time of symptom onset).
- Up to 714 subjects will be randomized. Primary endpoint will be functional outcome assessed by the modified Rankin scale at 90 days post-stroke ("mRS shift analysis").

# Large Core Thrombectomy

- RCTs on the way
- Large core intervention maybe more about accepting that patients will not be back to baseline function but will do better than no treatment.

**good outcomes** (selective treatment) vs. **therapeutic effect**

# Conclusions

- To date all cohorts that have been evaluated have NNT ~2-3 in favor of thrombectomy
- Equipoise exists for the time being for both low NIHSS and low ASPECT populations
- Ongoing randomized trials will define the limits of therapeutic benefit
- These studies will have material impact on patient and imaging workflow and systems of care