



# SUMMARY

## International Stroke Conference

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## ZODIAC TRIAL

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### ZERO DEGREE HEAD POSITIONING IN ACUTE LARGE VESSEL ISCHEMIC STROKE

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**Population:** Acute ischemic stroke patients with LVO, ASPECTS  $\geq 6$ , mRS  $< 1$

**Treatment:** Keeping head of bed at either 0-degree or 30-degree before thrombectomy

**Keeping head flat before thrombectomy is associated with:**

- Less odds of early neurological worsening (Increase NIHSS  $> 4$  points) compared with 30-degree position (2.22% vs 42.55%).
- Higher odds of NIHSS improvement at 24h (86.67% vs 60.8%)
- Higher odds of NIHSS improvement at 7 days (86.7% vs 76.4%)

	0-degree	30-degree
Early Neurological Worsening ( $\geq 4$ NIHSS points)	2.22	42.55
NIHSS Improvement at 24h	86.67%	60.8%
NIHSS Improvement at 7 days	86.67%	76.4%

**Bottom Line:** Keep head of the patient with LVO flat before thrombectomy if possible

NeurologyResidents  
RESOURCES FOR FUTURE NEUROLOGISTS

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**Multi-Arm Optimization of Stroke Thrombolysis**

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**Population:** 514 patients with acute ischemic stroke, NIHSS  $\geq 6$ , received IVT  $\pm$  MT, within 3h window

**Design:** multi-arm, blinded, randomized controlled trial

**Treatment Arms:** Either Argatroban (100  $\mu\text{g/kg}$  bolus then 3  $\mu\text{g/kg/min}$  for 12h), eptifibatide (135  $\mu\text{g/kg}$  bolus then 0.75  $\mu\text{g/kg/min}$  for 2h) or placebo

**Argatroban & Eptifibatide were associated with:**

- Worse 90-d uw-mRS (average 5.2, 6.3 vs 6.8 with placebo, higher number = better outcome)
- Increased Symptomatic ICH (sICH) (3.3-3.7% vs 1.8% with placebo)
- All-cause mortality (24.1-25% vs 7.8% with placebo)

	Placebo	Argatroban	Eptifibatide
90-d uw-mRS (mean)	6.8	5.2	6.3
sICH	1.8%	3.7%	3.3%
All-Cause Mortality	7.8%	24.1%	25%

**Bottom Line:** Addition of argatroban or eptifibatide to IVT in acute ischemic stroke was associated with worse outcome

## STOP-CAD TRIAL

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### ANTITHROMBOTIC TREATMENT FOR STROKE PREVENTION IN CERVICAL ARTERY DISSECTION

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**Population:** 3636 patients with cervical artery dissection (not related to major trauma, non-iatrogenic)

**Design:** observational retrospective analysis

**Treatment:** antiplatelets vs anticoagulation for 180 days (11.1% received anticoagulation vs 67.5% received antiplatelets)

**STOP-CAD Showed:**

- Anticoagulation was not associated with a significant lower risk of ischemic stroke, except in subset of patients with occlusive dissection
- Anticoagulation is associated with higher risk of major bleeding when used for 6 months (HR 5.5)
- Most ischemic stroke in dissection patients occur in the first 30 days (87%)

**Bottom Line:** Antiplatelets are reasonable choice for most patients with CAD. For patients with occlusive CAD, consider anticoagulation for 1 month followed by antiplatelet

## TREND TRIAL

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### TIROFIBAN FOR PREVENTION OF NEUROLOGICAL DETERIORATION IN ACUTE ISCHEMIC STROKE

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**Population:** non-cardioembolic ischemic stroke, within 24h, NIHSS 4-20 (most patients were 4-10), not-candidate for IVT/MT, Asian population

**Treatment arms:** Tirofiban infusion vs regular aspirin for 72h followed by aspirin alone or aspirin + clopidogrel

**TIROFIBAN INFUSION WITHIN 24H AFTER ONSET, FOR 72H WAS ASSOCIATED WITH:**

- Less neurological deterioration within 72h (4.2% vs 13.2%)
- No difference in 90d-mRS

**Bottom Line:** Evidence of beneficial effect of tirofiban in select AIS patients, needs to be replicated in non-Asian population and to show beneficial effect on 90d-mRS before being generalized

## RAISE TRIAL

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### RETEPLASE VERSUS ALTEPLASE FOR ACUTE ISCHAEMIC STROKE WITHIN 4.5 HOURS

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**Population:** 1412 Asian patient with acute ischemic stroke patients, IVT eligible, NIHSS 4-25, mRS 0-1

**Treatment:** either Reteplase (18mg + 18mg), Alteplase (0.9mg/kg)

**Reteplase in Asian population within 4.5 hours was associated with:**

- Better outcomes compared with alteplase
- Despite non-significantly higher any ICH, sICH incidence was not different

	Reteplase	Alteplase
0-1 mRS at 90 Days	80.1%	71.1%
0-2 mRS at 90 Days	85.8%	80.4%
NIHSS $\leq 1$ or NIHSS drop $\geq 4$ points at 24h	58.4%	48.5%
NIHSS $\leq 1$ or NIHSS drop $\geq 4$ points at 7D	74.1%	66.8%
sICH within 36h	2.4%	2%
sICH within 7 days	2.4%	2.1%
Massive Hemorrhage	3.3%	3%
Non-Massive Hemorrhage	5.4%	2.4%
Any ICH within 90 days	7.7%	4.9%

**Bottom Line:** Reteplase showed more favorable outcomes in Asian population compared with alteplase, opening the door for future studies in different populations

## INSPIRES

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### DUAL ANTIPLATELET THERAPY AND IMMEDIATE INTENSIVE STATIN IN MILD ISCHEMIC STROKE OR TRANSIENT ISCHEMIC ATTACK

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**Population:** 6100 patients with either mild ischemic stroke or high-risk TIA of presumed atherosclerotic origin

**Design:** 2x2 treatment arms, Intensive Antiplatelets, standard antiplatelet, Immediate Intensive Statins, Delayed Intensive Statins

**Treatment Options:**

- Intensive Antiplatelets: DAP (ASA + Clopidogrel) for 21 days followed by clopidogrel day 22-90
- Standard Antiplatelets: Aspirin for 90 days
- Immediate Intensive Statins: Atorvastatin 80 for 21 days then atorvastatin 40 day 22-90
- Delayed Intensive Statins: Atorvastatin 40 starting at day 4-90

**Intensive Antiplatelets + Immediate Intensive Statins was associated with:**

- 24% lower RR of stroke recurrence within 90 days compared with Aspirin alone + Delayed Intensive Statins. (Likely driven by DAP effect as seen in prior POINT/CHANCE trials)
- 2.4-fold increase in moderate-severe hemorrhage
- Improved 0-1 mRS at 90 days

Bottom Line: We know that DAP is effective in reducing stroke recurrence in mild stroke and high-risk TIA. The increased risk of bleeding with Immediate Intensive Statin therapy will need to be investigated further

## RESILIENT-EXTEND

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**Population:** 245 patients with LVO within 8-24h from LKW, NIHSS  $\geq 8$ , ASPECTS 5-10

**Treatment:** Mechanical Thrombectomy vs medical therapy alone

**Outcomes:**

- Mechanical Thrombectomy for LVO done within 8-24h without the need for CTP or MRI was associated with higher odds of functional independence (OR 2.56)

**Bottom Line:** Prior studies (SELECT2 and ANGEL-ASPECT) have already proven that MT within 24h (without CTP/MRI) was associated with better outcomes.

## GOLDEN-BRIDGE II

### EFFECT OF AN ARTIFICIAL INTELLIGENCE-BASED CLINICAL DECISION SUPPORT SYSTEM ON STROKE CARE QUALITY AND OUTCOMES IN PATIENTS WITH ACUTE ISCHEMIC STROKE : A CLUSTER-RANDOMIZED CLINICAL TRIAL

**Population:** 21,579 patients with acute ischemic stroke in China

**Study Arms:** Management of stroke patients (Diagnosis and treatment) is either done through AI-based recommendations or regular hospital stroke team

**AI-Driven management of Stroke Patients was associated with:**

- 25.6% (2.9% vs 3.9%) reduction in new vascular events (AIS, ICH, MI, vascular death) at 90 days
- Improved AIS Quality score - a score for stroke measures - (91.4% vs 89.7%)
- No significant improvement in 90-d mRS (mRS 0-2 88.2% vs 90.4%)

Outcome	AI-Driven	Stroke Team	P Value
<b>Total Vascular Events</b>	<b>2.9%</b>	<b>3.9%</b>	<b>0.001</b>
mRS ≥3	11.8%	9.6%	0.330
All-Cause Mortality	1.3%	1.3%	0.738
Moderate-Severe Bleeding	0.3%	0.3%	0.743
All Bleeding	0.8%	1.2%	0.119

Stroke Measures	AI-Driven	Stroke Team	CI
<b>Acute Measures</b>			
- Early Antithrombotic	98.2%	98.5%	
- <b>DAPT</b>	<b>76.2%</b>	<b>69.6%</b>	<b>4.8-8.3</b>
- Statin use	99.8%	99.6%	
- <b>Anticoagulation for Afib</b>	<b>77%</b>	<b>69.3%</b>	<b>2.3-13.0</b>
- Anti-diabetic use	92.2%	91.8%	
- Anti-hypertensive use	81.1%	78.5%	
- <b>Dysphagia screening</b>	<b>98.5%</b>	<b>91.2%</b>	<b>6.7-7.9</b>
- <b>DVT prophylaxis</b>	<b>37.1%</b>	<b>30%</b>	<b>4.1-10.1</b>
<b>Discharge performance measures</b>			
- Early Antithrombotic	98%	97.8%	
- Statin use	98.8%	98.6%	
- <b>Anticoagulation for Afib</b>	<b>77.3%</b>	<b>67.5%</b>	<b>4.7-15</b>
- Anti-diabetic use	90.6%	89.4%	
- Anti-hypertensive use			

**Bottom Line:** Golden Bridge II opens the way for AI-guided patient management



## THROMBECTOMY FOR EMERGENT SALVAGE OF LARGE ANTERIOR CIRCULATION ISCHEMIC STROKE

**Population:** Patients with either ICA or M1 occlusion, NIHSS > 6, ASPECTS 2-5, mRS 0-1 within 24h from LKW

**Treatment:** Thrombectomy versus medical therapy alone

**Outcomes:**

	MT	No MT	CI
90-d mRS – average	2.93	2.27	-0.09 – 1.3
1-year mRS – average	3.65	2.78	
1-year mRS 0-2	22%	6%	
1-year EQ-5D-5L Score	60.3	49.3	
1-year Mortality	43%	47%	

**Bottom Line:**

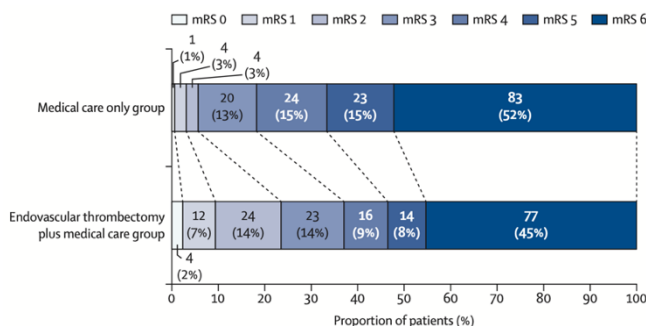
- Ischemic stroke patients with large core infarcts (ASPECTS 2-5) and good baseline mRS should go for thrombectomy without the need for advanced imaging (CTP or MRI)
- 1-year mRS will be a standard in future stroke trials in addition to the current 90-d mRS standard

## ENDOVASCULAR THROMBECTOMY PLUS MEDICAL CARE VERSUS MEDICAL CARE ALONE FOR LARGE ISCHEMIC STROKE: 1-YEAR OUTCOMES OF THE SELECT2 TRIAL

**Population:** 352 AIS patients with LVO and large core infarct (ASPECTS 3-5 or CTP core ≥ 50), mRS 0-1

**Treatment:** Mechanical thrombectomy versus medical treatment

	MT	No MT	CI
90-d mRS 0-2 (Functional Independence)	20.3%	7%	1.6 - 5.51
1-year mRS 0-2	24%	6%	1.9 – 5.8
1-year mRS 0-3 (Independent ambulation)	37%	18%	1.36-2.59
1-year Mortality	45%	52%	0.71 – 1.11



## MAGIC-MT

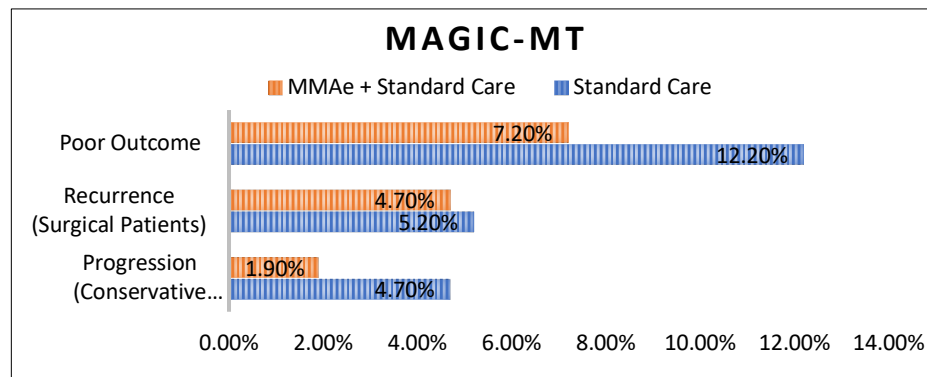
### MANAGING NON-ACUTE SUBDURAL HEMATOMA USING LIQUID MATERIALS

**Inclusion:** Patients with symptomatic subacute and chronic SDH

**Treatment:** Standard care (medical or surgical) +/- MMA embolization

- 365 assigned to MMAe, 281 had burr hole, 84 conservative
- 362 assigned to standard treatment, 284 had burr hold, 78 conservative

	Standard Care + MMA Embo	Standard Care Alone	P
Primary Outcome (Death, Symptomatic Recurrence or Progression)	7.2%	12.2%	0.02
Symptomatic Recurrence (surgical treatment)	4.7%	5.2%	
Symptomatic Progression (conservatively treatment)	1.9%	4.7%	
0-2 90-d mRS	97.8%	96.4%	



**Bottom Line:** Consider MMA embolization for patients with symptomatic subacute or chronic SDH, either going for surgical evacuation or not, to reduce risk of recurrence/progression and death

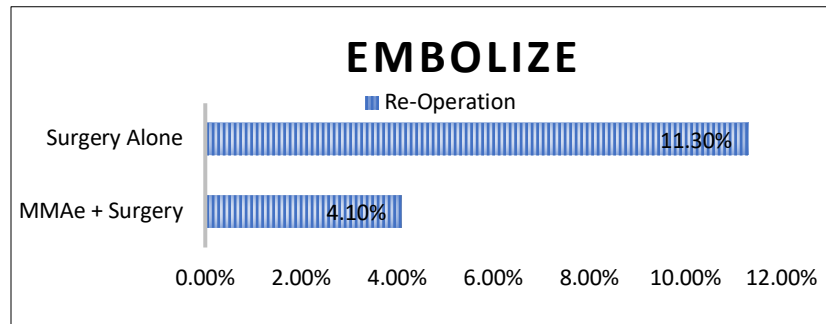
## EMBOLISE

### EMBOLIZATION OF MMA WITH ONYX LIQUID EMBOLIC SYSTEM IN THE TREATMENT OF SUBACUTE-CHRONIC SDH

**Inclusion:** 400 patients with subacute-chronic symptomatic SDH requiring surgery

**Treatment:** Either surgery alone or Surgery + MMA embolization (using Onyx LES)

	Embo + Surgery	Surgery alone	P
SDH recurrence requiring Re-operation at 90-d	4.1%	11.3%	0.0081
Neurological deterioration	11.9%	9.8%	0.002
Stroke 90-d Incidence	2%	1.5%	0.72



**Bottom Line:** Consider Onyx MMA embolization prior to surgical evacuation of symptomatic subacute-chronic SDH to reduce risk of recurrence.

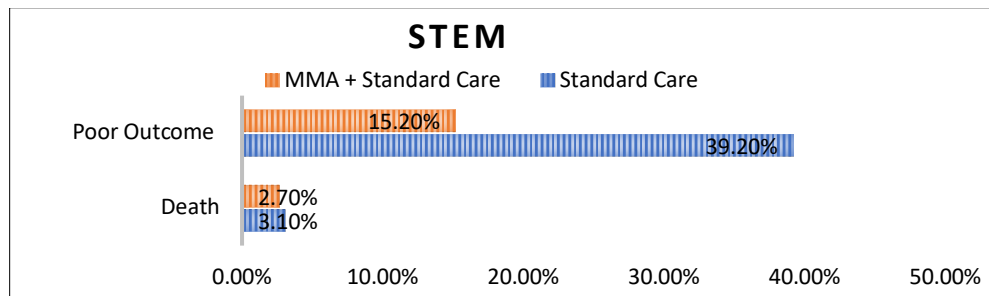
## STEM TRIAL

### THE SQUID TRIAL FOR THE EMBOLIZATION OF THE MIDDLE MENINGEAL ARTERY FOR TREATMENT OF CHRONIC SUBDURAL HEMATOMA

**Inclusion:** 310 Patients with symptomatic chronic SDH, either measuring  $\geq 10$  mm or causing mass effect

**Treatment:** Standard care (medical or surgical) +/- MMA embolization

	Standard Care + MMA Embo	Standard Care Alone	P
Primary Outcome Within 180 days (Residual, Reaccumulation, Re-Operation, Stroke, MI or Death)	15.2%	39.2%	0.001
All Cause Death	2.7%	3.1%	



**Bottom Line:** Consider SQUID MMA embolization for patients with symptomatic chronic SDH, either going for surgical evacuation or not to improve outcomes.

## Dementia & Cognitive Impairment in Acute Ischemic Stroke – Metanalysis of Reperfusion Outcomes:

- IVT: No significant difference in favorable outcomes, mortality, sICH
- EVT: No significant difference in favorable outcomes, but there is increased risk of ICH