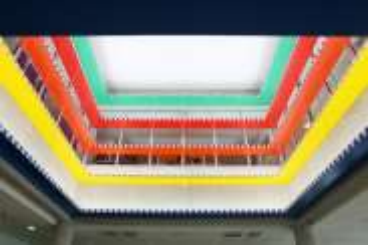


Hôpitaux de Toulouse

Nouveautés
en Neurologie Vasculaire

Toulouse NeuroImaging Center
ToNIC
UMR1214

Company Name	*Honoraria/ Expenses*	*Consulting/ Advisory Board*	*Funded Research*
Astra Zeneca		X	
Boehringer Ingelheim	X		
Bristol Mayer Squibb	X		
Pfizer	X		
Boston Scientific	X		
Servier		X	

Phase Aiguë

1. Thrombectomie: Hermes-Thrace-Siesta
2. Thrombolyse Enchanted
3. Hématome Patch / Attach 2

Structured assessment of modified Rankin scale

Has the patient made a complete recovery with **absolutely no** residual signs or symptoms of stroke?

YES → **mRS score = 0**

NO ↓

Can the patient perform every regular activity that they could undertake prior to the stroke? Regular is defined as more frequently than monthly; includes work, social and leisure activities (eg driving a car, dancing, reading or working)

YES → **mRS score = 1**

Please briefly document what neurological symptoms/signs are present?

_____

NO ↓

Can the patient perform all their activities of daily living without assistance?
ie mobility, dressing, bathing, toileting, feeding, preparing simple meals, travelling locally without supervision.
Can the patient be safely left alone for a period of at least 1 week?

YES → **mRS score = 2**

What usual activities have ceased?

_____

A Randomized Trial of Intraarterial Treatment for Acute Ischemic Stroke

Endovascular Therapy for Ischemic Stroke with Perfusion-Imaging Selection

Randomized Assessment of Rapid Endovascular Treatment of Ischemic Stroke

Stent-Retriever Thrombectomy after Intravenous t-PA vs. t-PA Alone in Stroke

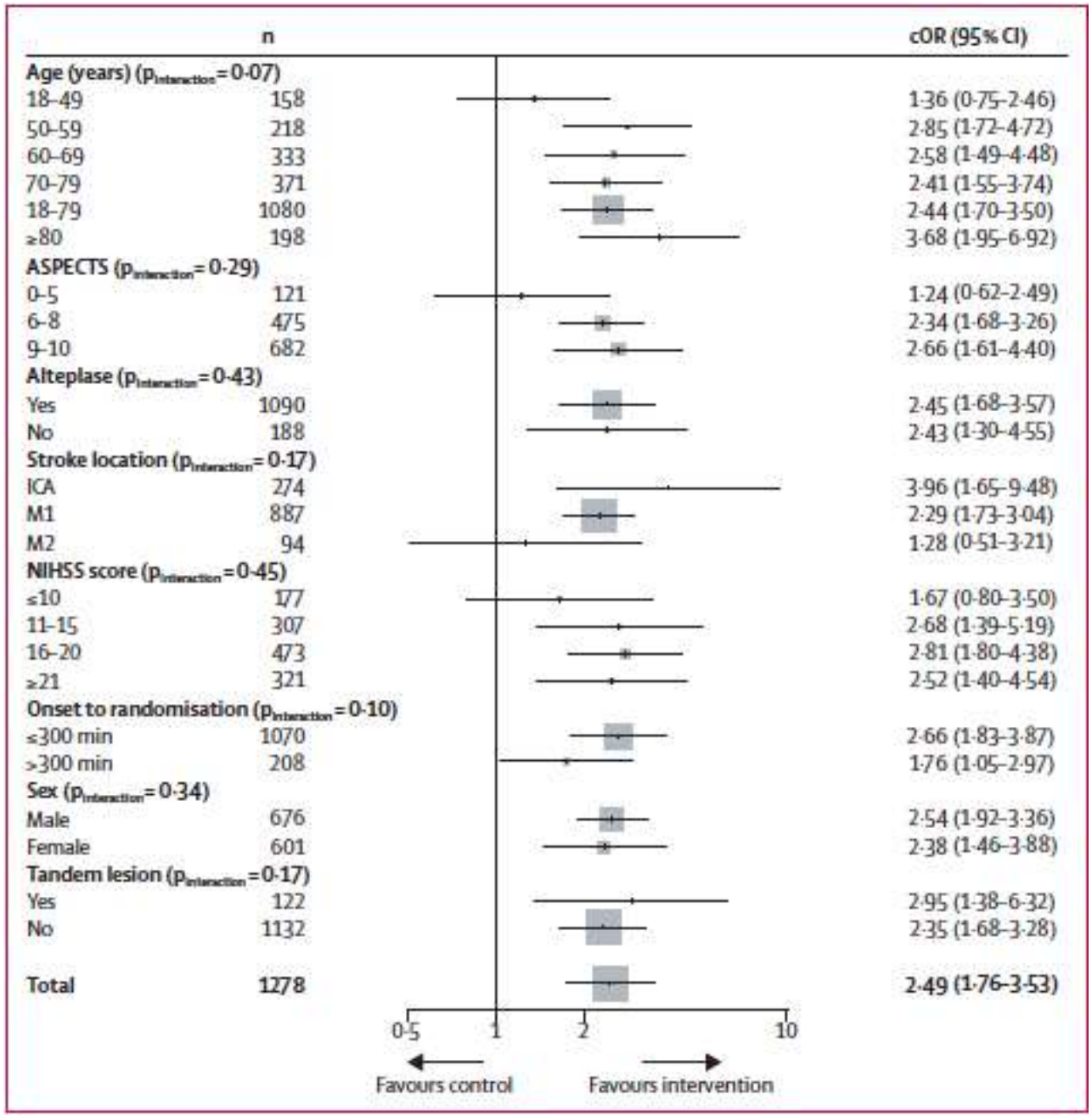
Thrombectomy within 8 Hours after Symptom Onset in Ischemic Stroke

Endovascular thrombectomy after large-vessel ischaemic stroke: a meta-analysis of individual patient data from five randomised trials

Extraction of Individual Data of 5 Studies

Outcome:
Modified Rankin Scale 0-2

Comparison:
Thrombectomy vs. Best Medical treatment


n
cOR (95% CI)
Age (years) ($p_{interaction}$ = 0·07)
18–49 158 1·36 (0·75–2·46)
50–59 218 2·85 (1·72–4·72)
60–69 333 2·58 (1·49–4·48)
70–79 371 2·41 (1·55–3·74)
18–79 1080 2·44 (1·70–3·50)
≥80 198 3·68 (1·95–6·92)
ASPECTS ($p_{interaction}$ = 0·29)
0–5 121 1·24 (0·62–2·49)
6–8 475 2·34 (1·68–3·26)
9–10 682 2·66 (1·61–4·40)
Alteplase ($p_{interaction}$ = 0·43)
Yes 1090 2·45 (1·68–3·57)
No 188 2·43 (1·30–4·55)
Stroke location ($p_{interaction}$ = 0·17)
ICA 274 3·96 (1·65–9·48)
M1 887 2·29 (1·73–3·04)
M2 94 1·28 (0·51–3·21)
NIHSS score ($p_{interaction}$ = 0·45)
≤10 177 1·67 (0·80–3·50)
11–15 307 2·68 (1·39–5·19)
16–20 473 2·81 (1·80–4·38)
≥21 321 2·52 (1·40–4·54)
Onset to randomisation ($p_{interaction}$ = 0·10)
≤300 min 1070 2·66 (1·83–3·87)
>300 min 208 1·76 (1·05–2·97)
Sex ($p_{interaction}$ = 0·34)
Male 676 2·54 (1·92–3·36)
Female 601 2·38 (1·46–3·88)
Tandem lesion ($p_{interaction}$ = 0·17)
Yes 122 2·95 (1·38–6·32)
No 1132 2·35 (1·68–3·28)
Total 1278 2·49 (1·76–3·53)
0·5
1
2
10
Favours control
Favours intervention

Endovascular thrombectomy after large-vessel ischaemic stroke: a meta-analysis of individual patient data from five randomised trials

	Intervention population	Control population	Risk difference (%)
mRS score reduction (shift analysis; primary outcome)*	..	..	..
mRS score 0–1 at 90 days	26·9% (170/633)	12·9% (83/645)	14·0
mRS score 0–2 at 90 days	46·0% (291/633)	26·5% (171/645)	19·5
NIHSS score 0–2 at 24 h	21·0% (129/615)	8·3% (52/630)	12·7
Early neurological recovery at 24 h	50·2% (309/616)	21·2% (134/633)	29·0


NNT = 7


NNT = 5


NNT = 7

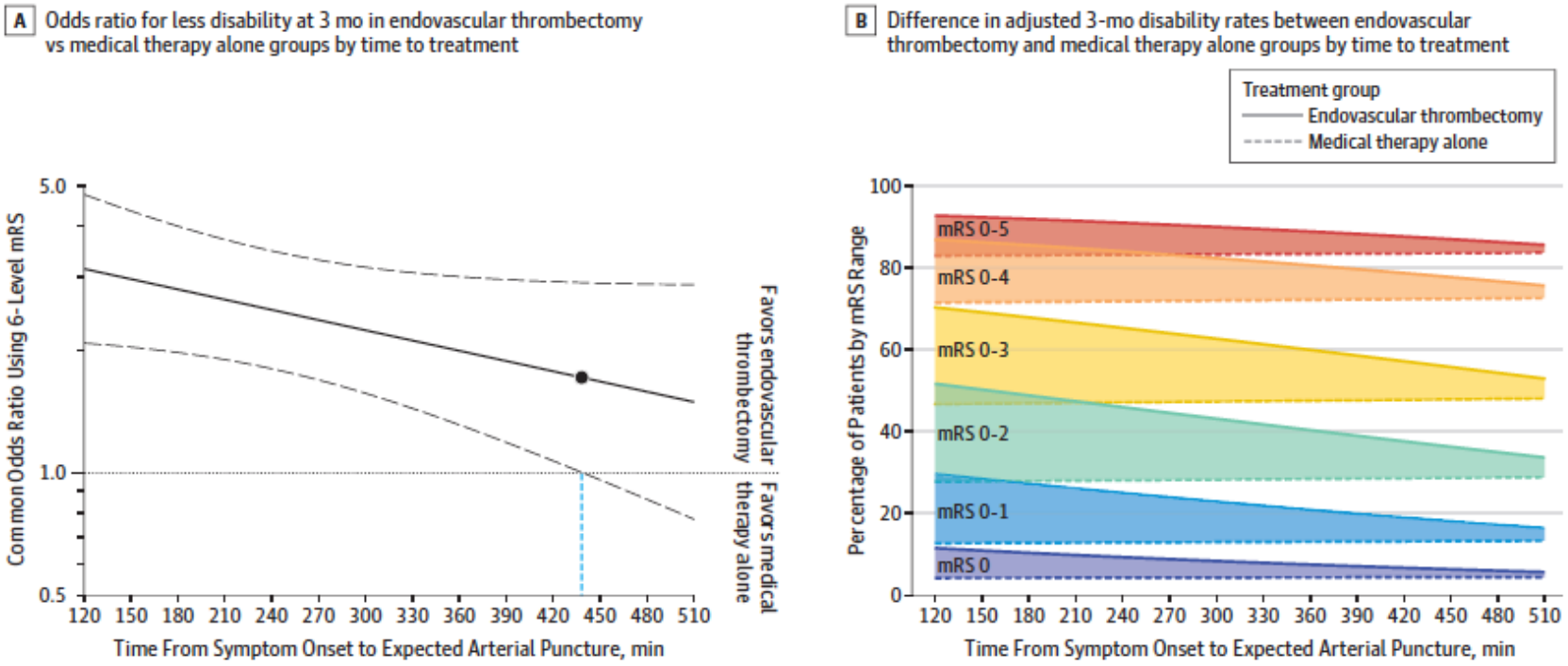

NNT = 3

JAMA | Original Investigation

Time to Treatment With Endovascular Thrombectomy and Outcomes From Ischemic Stroke: A Meta-analysis

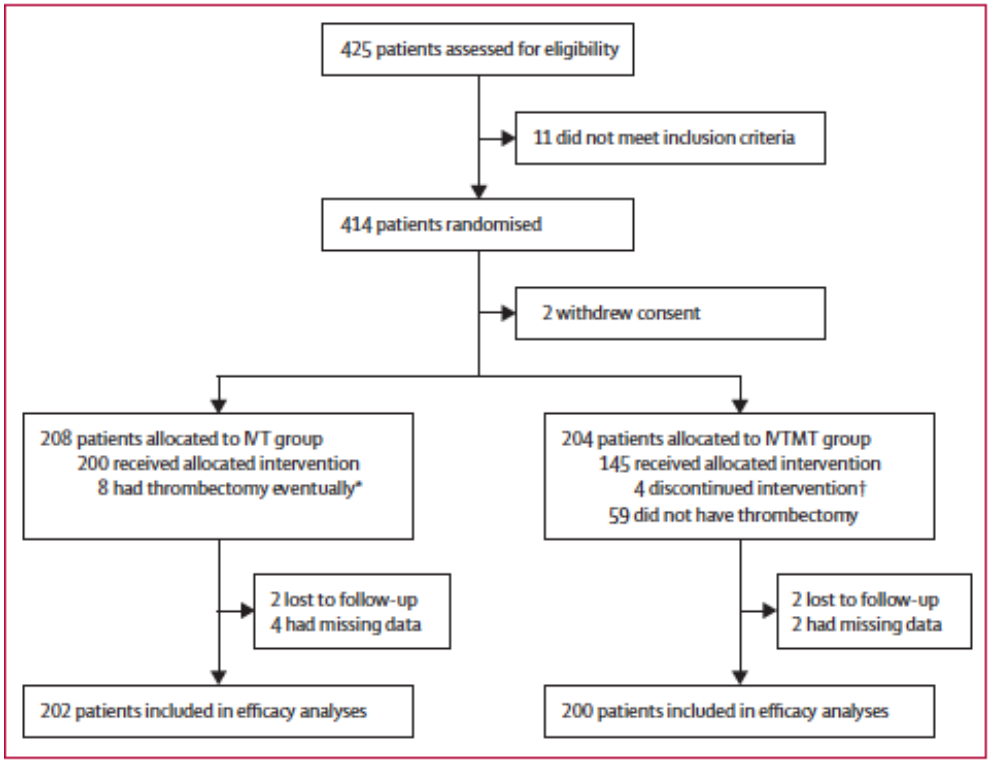
	Endovascular Thrombectomy		Medical Therapy		*P* Value for Interaction With Treatment Group
	OR (95% CI) per 1-Hour Delay	ARD, % (95% CI) per 1-Hour Delay[a]	OR (95% CI) per 1-Hour Delay	ARD, % (95% CI) per 1-Hour Delay[a]	
ED Arrival-to-Arterial Puncture Time Interval (Expected)[e]					
mRS shift[b]	0.56 (0.47 to 0.67)	−16.8	0.98 (0.82 to 1.16)	−1.2	<.001
mRS 0-2	0.55 (0.43 to 0.71)	−14.1 (−19.2 to −8.3)	0.94 (0.74 to 1.19)	−1.2 (−5.4 to 3.5)	.001
Mortality	1.44 (1.11 to 1.87)	5.4 (1.4 to 10.0)	0.98 (0.75 to 1.27)	−0.3 (−4.0 to 3.8)	.03
ED Arrival-to-Reperfusion Time Interval (Expected)[f]					
mRS shift[b]	0.57 (0.48 to 0.67)	−16.7	0.95 (0.80 to 1.12)	−2.2	<.001
mRS 0-2	0.56 (0.45 to 0.70)	−13.7 (−18.2 to −8.6)	0.91 (0.73 to 1.13)	−1.8 (−5.7 to 2.4)	.001
Mortality	0.91 (0.88 to 0.93)	−1.2 (−1.6 to −0.9)	1.06 (0.84 to 1.33)	0.9 (−2.5 to 4.8)	.02

Figure 1. Association of Time From Symptom Onset to Expected Time of Endovascular Thrombectomy Procedure Start (Arterial Puncture) With Disability Levels at 3 Months in Endovascular (n = 633) vs Medical Therapy (n = 645) Groups

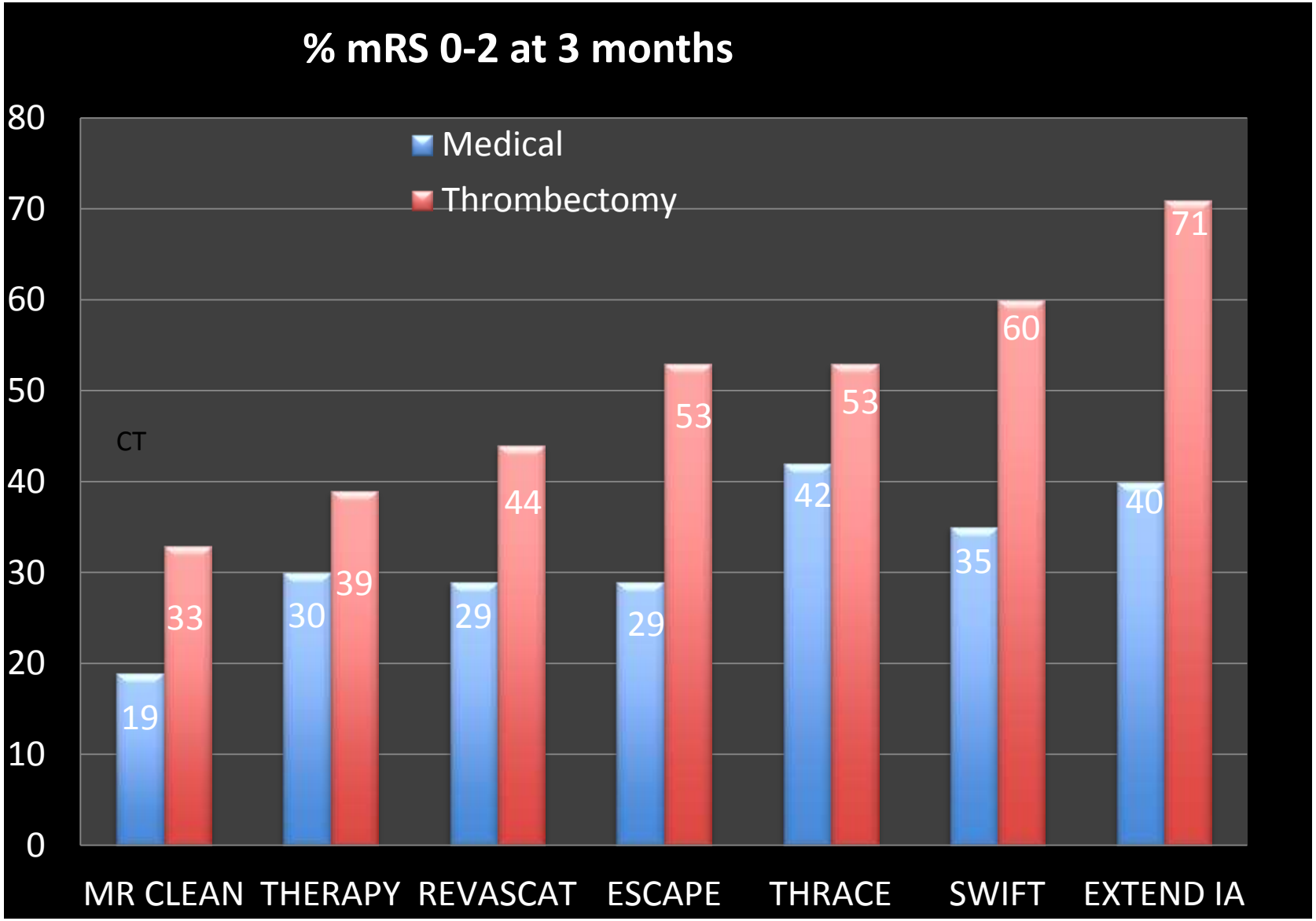


Mechanical thrombectomy after intravenous alteplase versus alteplase alone after stroke (THRACE): a randomised controlled trial

*Serge Bracard, Xavier Ducrocq, Jean Louis Mas, Marc Soudant, Catherine Oppenheim, Thierry Moulin, Francis Guillemin, on behalf of the THRACE investigators**



	IVT group	IVTMT group	Odds ratio (95% CI)	p value
Modified Rankin score of 0–2 at 3 months*	85/202 (42%)	106/200 (53%)	1·55 (1·05–2·30)	0·028



JAMA | Original Investigation

Effect of Conscious Sedation vs General Anesthesia on Early Neurological Improvement Among Patients With Ischemic Stroke Undergoing Endovascular Thrombectomy A Randomized Clinical Trial

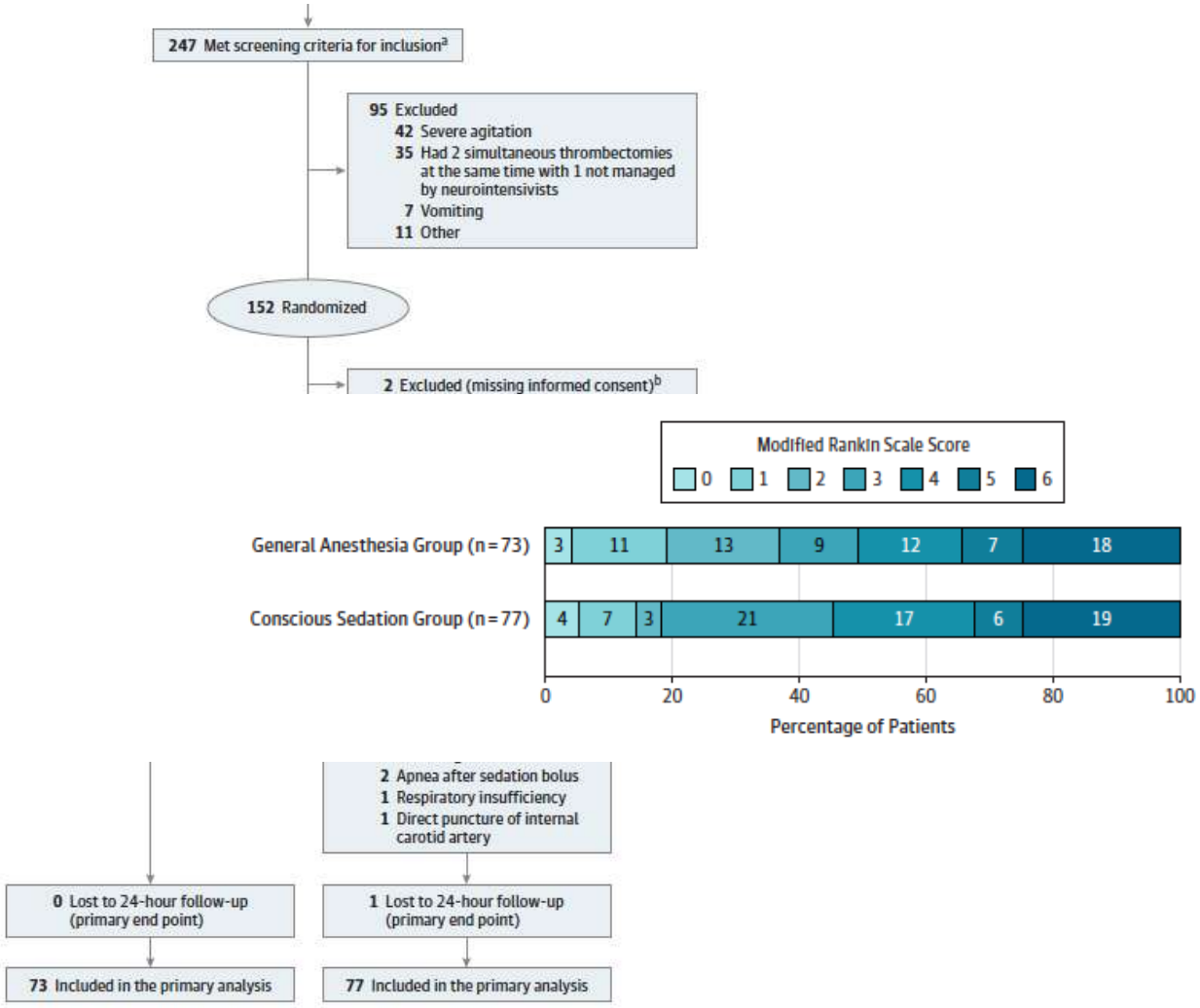
Silvia Schönenberger, MD; Lorenz Uhlmann, MSc; Werner Hacke, MD, PhD; Simon Schieber, MD; Sibu Mundiyanapurath, MD; Jan C. Purrucker, MD; Simon Nagel, MD; Christina Klose; Johannes Pfaff, MD; Martin Bendszus, MD; Peter A. Ringleb, MD; Meinhard Kieser, PhD; Markus A. Möhlenbruch, MD; Julian Bösel, MD, FNCS

Acute Brain Infarction ICA/MCA occlusion, NIHSS > 10

PROBE design: Prospective Open Label, Blinded Outcome Evaluation

Conscious sedation vs. General anesthesia

DESIGN, SETTING, AND PARTICIPANTS SIESTA (Sedation vs Intubation for Endovascular Stroke Treatment), a single-center, randomized, parallel-group, open-label treatment trial with blinded outcome evaluation conducted at Heidelberg University Hospital in Germany (April 2014-February 2016) included 150 patients with acute ischemic stroke in the anterior circulation, higher National Institutes of Health Stroke Scale (NIHSS) score (>10), and isolated/combined occlusion at any level of the internal carotid or middle cerebral artery.


247 Met screening criteria for inclusion[a]
95 Excluded
42 Severe agitation
35 Had 2 simultaneous thrombectomies at the same time with 1 not managed by neurointensivists
7 Vomiting
11 Other
152 Randomized
2 Excluded (missing informed consent)[b]
Modified Rankin Scale Score
0 1 2 3 4 5 6
General Anesthesia Group (n = 73)
3 11 13 9 12 7 18
Conscious Sedation Group (n = 77)
4 7 3 21 17 6 19
0 20 40 60 80 100
Percentage of Patients
2 Apnea after sedation bolus
1 Respiratory insufficiency
1 Direct puncture of internal carotid artery
0 Lost to 24-hour follow-up (primary end point)
1 Lost to 24-hour follow-up (primary end point)
73 Included in the primary analysis
77 Included in the primary analysis

Thrombectomie en attente

1. Comparaison aspiration vs. Stentriever (Etude ASTER)
2. Thrombectomie vs thrombectomie +rtPA
3. Evaluation de la filière de soins
4. Hors délais
    - DAWN Mismatch NIHSS et DWI ou CTP
    - DEFUSE 3 Target Mismatch CTP


DesTop
LIQUIDE

ORIGINAL ARTICLE

Low-Dose versus Standard-Dose Intravenous Alteplase in Acute Ischemic Stroke

C.S. Anderson, T. Robinson, R.I. Lindley, H. Arima, P.M. Lavados, T.-H. Lee, J.P. Broderick, X. Chen, G. Chen, V.K. Sharma, J.S. Kim, N.H. Thang, Y. Cao, M.W. Parsons, C. Levi, Y. Huang, V.V. Olavarría, A.M. Demchuk, P.M. Bath, G.A. Donnan, S. Martins, O.M. Pontes-Neto, F. Silva, S. Ricci, C. Roffe, J. Pandian, L. Billot, M. Woodward, Q. Li, X. Wang, J. Wang, and J. Chalmers, for the ENCHANTED Investigators and Coordinators*

Hypothesis: Low dose of tPA 0.6 vs. 0.9 improves recovery along with a lower rate of symptomatic hemorrhage

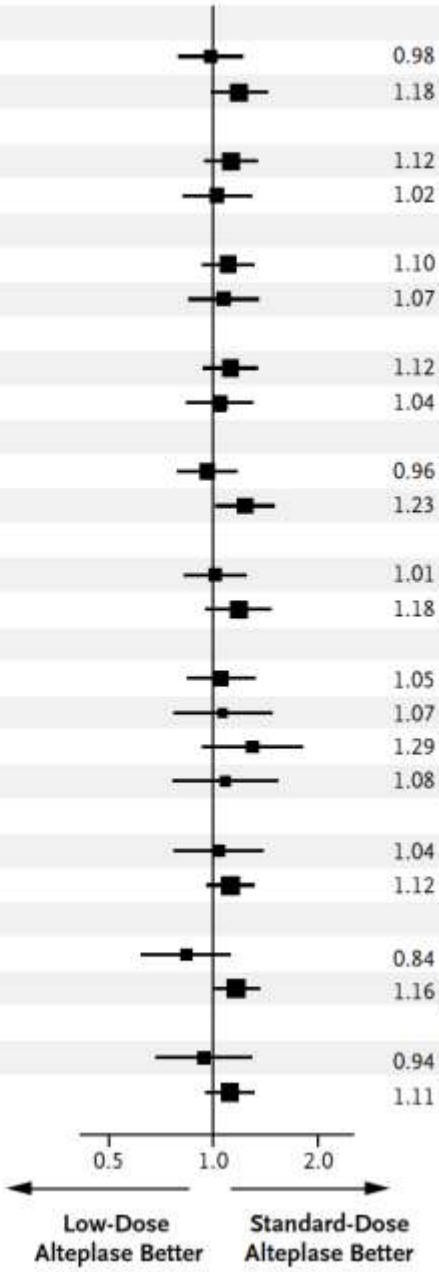
Table 2. Primary and Secondary Outcomes at 3 Months.*

Outcome	Low-Dose Alteplase (N=1654)	Standard-Dose Alteplase (N=1643)	Odds Ratio with Low-Dose Alteplase (95% CI)	P Value†	P Value for Noninferiority‡
Primary outcome: death or disability — no./total no. (%)§	855/1607 (53.2)	817/1599 (51.1)	1.09 (0.95 to 1.25)		0.51
Secondary outcomes					
Symptomatic intracerebral hemorrhage — no. (%)					
By SITS-MOST criteria¶	17 (1.0)	35 (2.1)	0.48 (0.27 to 0.86)	0.01	
By NINDS criteria‖	98 (5.9)	131 (8.0)	0.73 (0.55 to 0.95)	0.02	

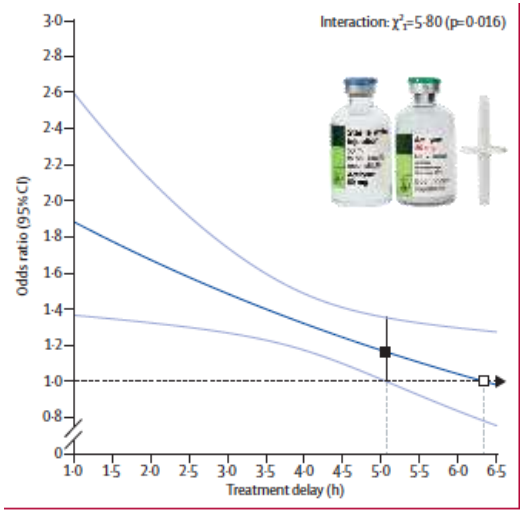
N augmente pas le taux de récupération neurologique

Mais réduit celui des hémorragies symptomatiques

Subgroup	Low-Dose Alteplase	Standard-Dose Alteplase	Odds Ratio (95% CI)	P Value for Interaction
	no. (%)			
Age				0.20
<65 yr	302 (43.9)	301 (44.3)	0.98 (0.79–1.22)	
≥65 yr	553 (60.2)	516 (56.1)	1.18 (0.98–1.42)	
Sex				0.53
Male	503 (50.9)	480 (48.0)	1.12 (0.94–1.34)	
Female	352 (57.0)	337 (56.4)	1.02 (0.82–1.29)	
Race				0.82
Asian	527 (51.5)	500 (49.0)	1.10 (0.93–1.31)	
Non-Asian	328 (56.4)	317 (54.7)	1.07 (0.85–1.35)	
Time from stroke onset to randomization				0.63
<3 hr	536 (54.5)	497 (51.8)	1.12 (0.93–1.34)	
≥3 hr	319 (51.1)	320 (50.1)	1.04 (0.84–1.30)	
Baseline systolic blood pressure				0.08
≤150 mm Hg	404 (50.6)	402 (51.6)	0.96 (0.79–1.17)	
>150 mm Hg	451 (55.7)	415 (50.6)	1.23 (1.01–1.49)	
Baseline NIHSS score				0.31
≤8	282 (34.9)	282 (34.6)	1.01 (0.83–1.24)	
>8	573 (71.8)	535 (68.3)	1.18 (0.95–1.46)	
Final diagnosis of ischemic stroke				0.88
Large-artery atheroma occlusion	356 (58.0)	362 (56.7)	1.05 (0.84–1.32)	
Small-vessel disease	114 (34.4)	110 (33.0)	1.07 (0.77–1.47)	
Cardioembolism	212 (67.5)	193 (61.7)	1.29 (0.93–1.79)	
Other definite or uncertain cause	138 (51.1)	117 (49.2)	1.08 (0.76–1.53)	
Cerebral infarction on CT				0.66
Yes	205 (58.9)	220 (58.0)	1.04 (0.77–1.39)	
No	649 (51.7)	597 (48.9)	1.12 (0.95–1.31)	
Use of antiplatelet agent				0.05
Yes	222 (56.3)	204 (60.7)	0.84 (0.62–1.12)	
No	632 (52.3)	612 (48.5)	1.16 (0.99–1.36)	
Evidence of atrial fibrillation				0.34
Yes	249 (66.9)	233 (68.3)	0.94 (0.69–1.28)	
No	603 (49.1)	584 (46.4)	1.11 (0.95–1.30)	



Functional outcomes of pre-hospital thrombolysis in a mobile stroke treatment unit compared with conventional care: an observational registry study



STT

Emberson et al. Lancet Sept 2014

NNT-8

Time from admission to thrombolysis (min)	43·1 (37, 29–51)	NA	NA
Time from onset to thrombolysis (min)††			
Mean (SD)	129·3 (55·5)	96·3 (60·4)	..
Median (IQR)	112 (85–175)	73 (53–120)	<0·0005
Time from onset to thrombolysis ≤60 min	14 (4%)	112 (37%)	<0·0005
Time from onset to thrombolysis ≤90 min	123 (35%)	187 (62%)	<0·0005

	Conventional care (n=353)	STEMO care (n=305)	p value
Primary outcome			
3-month mRS score 0–1	166 (47%)	161 (53%)	0·14
Secondary outcomes			
3-month mRS score 0–3	260 (74%)	253 (83%)	0·004
3-month mortality	37 (10%)	17 (6%)	0·022
3-month mRS score			0·10*
0	106 (30%)	85 (28%)	..
1	60 (17%)	76 (25%)	..
2	55 (16%)	32 (10%)	..
3	39 (11%)	60 (20%)	..
4	37 (10%)	22 (7%)	..
5	19 (5%)	13 (4%)	..
6	37 (10%)	17 (6%)	..

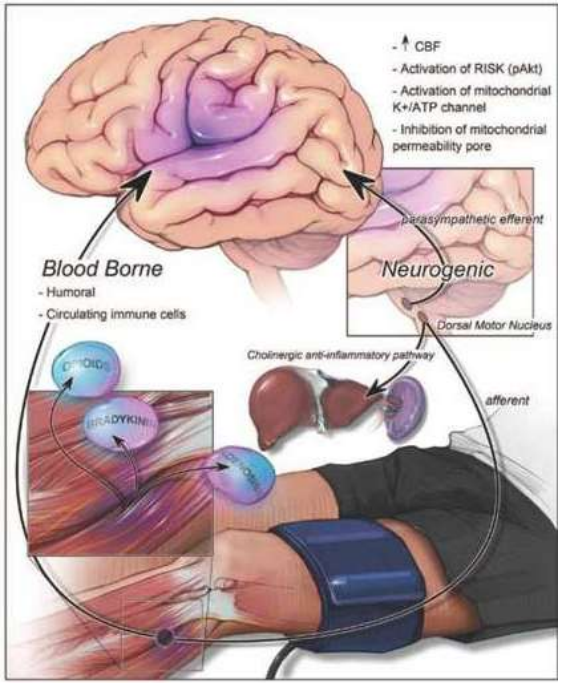
En attente 2017-18

- Thrombolyse:
  - Hors délai: Target Mismatch CTP: EXTEND-ECASS 4, Wake Up…
  - Boostée: tPA + antithrombine ou anti IIbIIIa…
  - Abandonnée: tPA vs. Placebo ou vs. TNK tPA avant thrombectomie
  - Revisitée: tNK pour minor stroke

Neuroprotection=Echec

- Concepts:
  - Randomisation dans l'ambulance: Magnésium, NO
  - Geler la pénombre ischémique: Froid, O2, Anticorps Monoclonaux
  - Traiter Inflammation: Cyclosporine, Natalizumab, Fingolimod
  - …

- Pré-conditionnement Ischémique



Platelet transfusion versus standard care after acute stroke due to spontaneous cerebral haemorrhage associated with antiplatelet therapy (PATCH): a randomised, open-label, phase 3 trial

M Irem Baharoglu*, Charlotte Cordonnier*, Rustam Al-Shahi Salman*, Koen de Gans, Maria M Koopman, Anneke Brand, Charles B Majoie, Ludo F Beenen, Henk A Marquering, Marinus Vermeulen, Paul J Nederkoorn, Rob J de Haan, Yvo B Roos, for the PATCH Investigators†

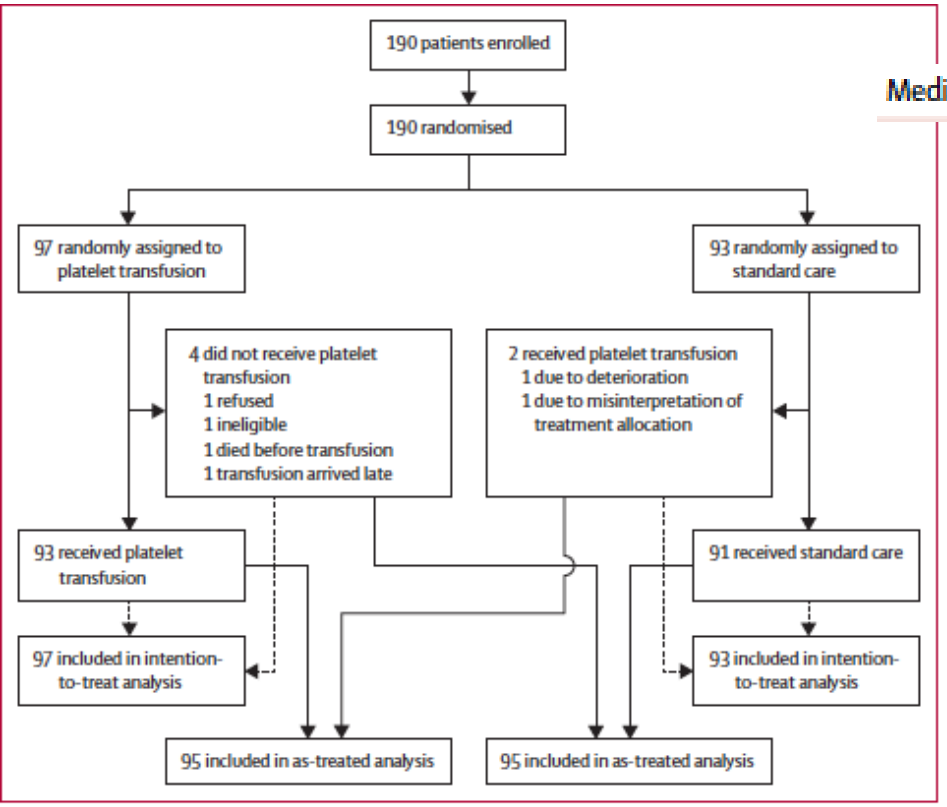
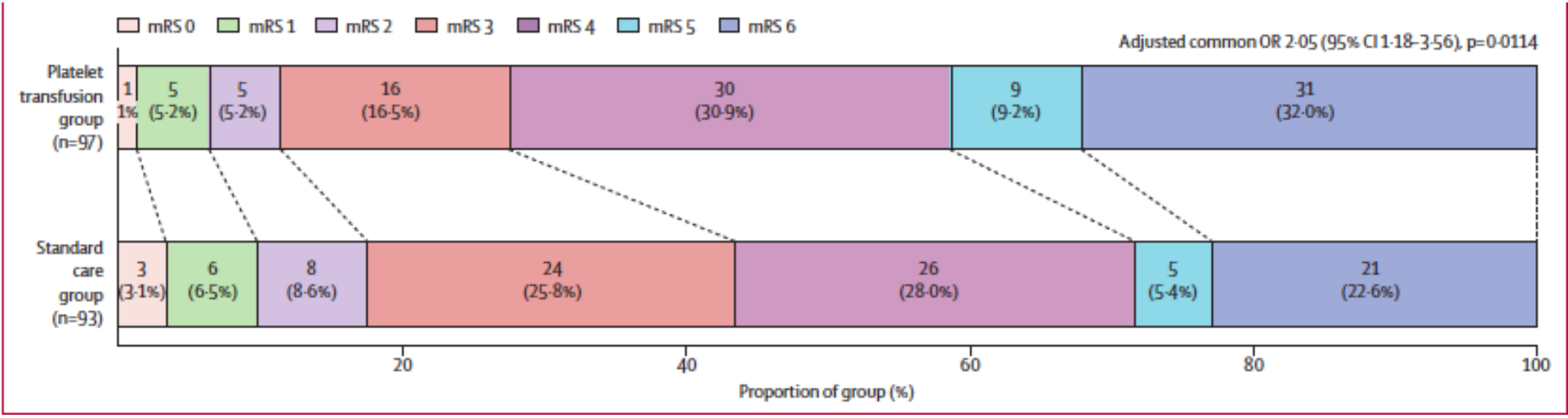


Figure 1: Trial profile

Median ICH volume (mL)	13·1 (5·4–42·4)	8·0 (4·4–25·8)

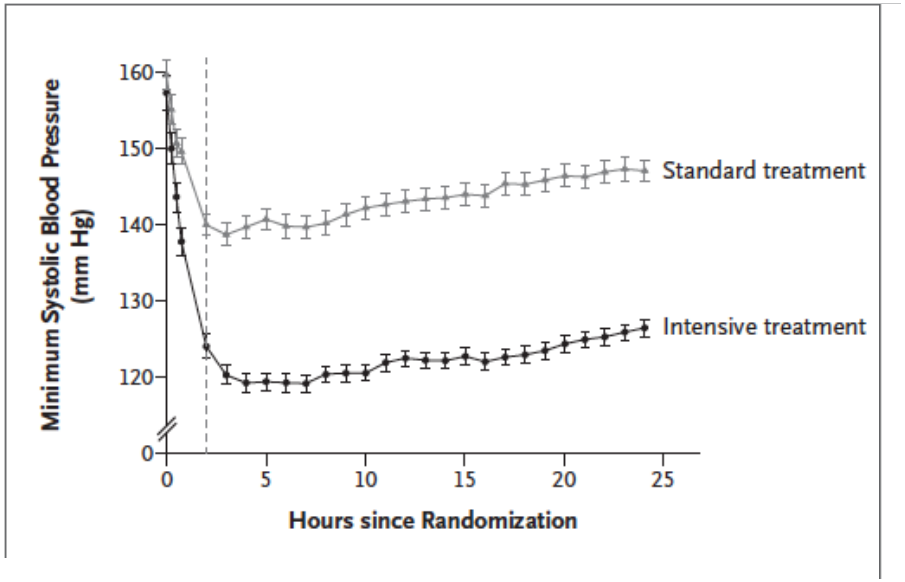
80% sous Aspirine

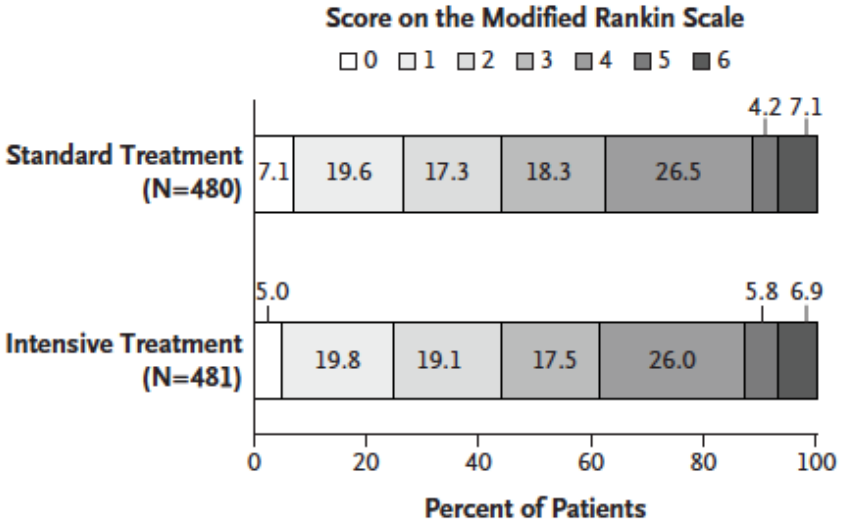

mRS 0
mRS 1
mRS 2
mRS 3
mRS 4
mRS 5
mRS 6
Adjusted common OR 2·05 (95% CI 1·18–3·56), p=0·0114
Platelet transfusion group (n=97)
1 1%
5 (5·2%)
5 (5·2%)
16 (16·5%)
30 (30·9%)
9 (9·2%)
31 (32·0%)
Standard care group (n=93)
3 (3·1%)
6 (6·5%)
8 (8·6%)
24 (25·8%)
26 (28·0%)
5 (5·4%)
21 (22·6%)
20
40
60
80
100
Proportion of group (%)

ORIGINAL ARTICLE

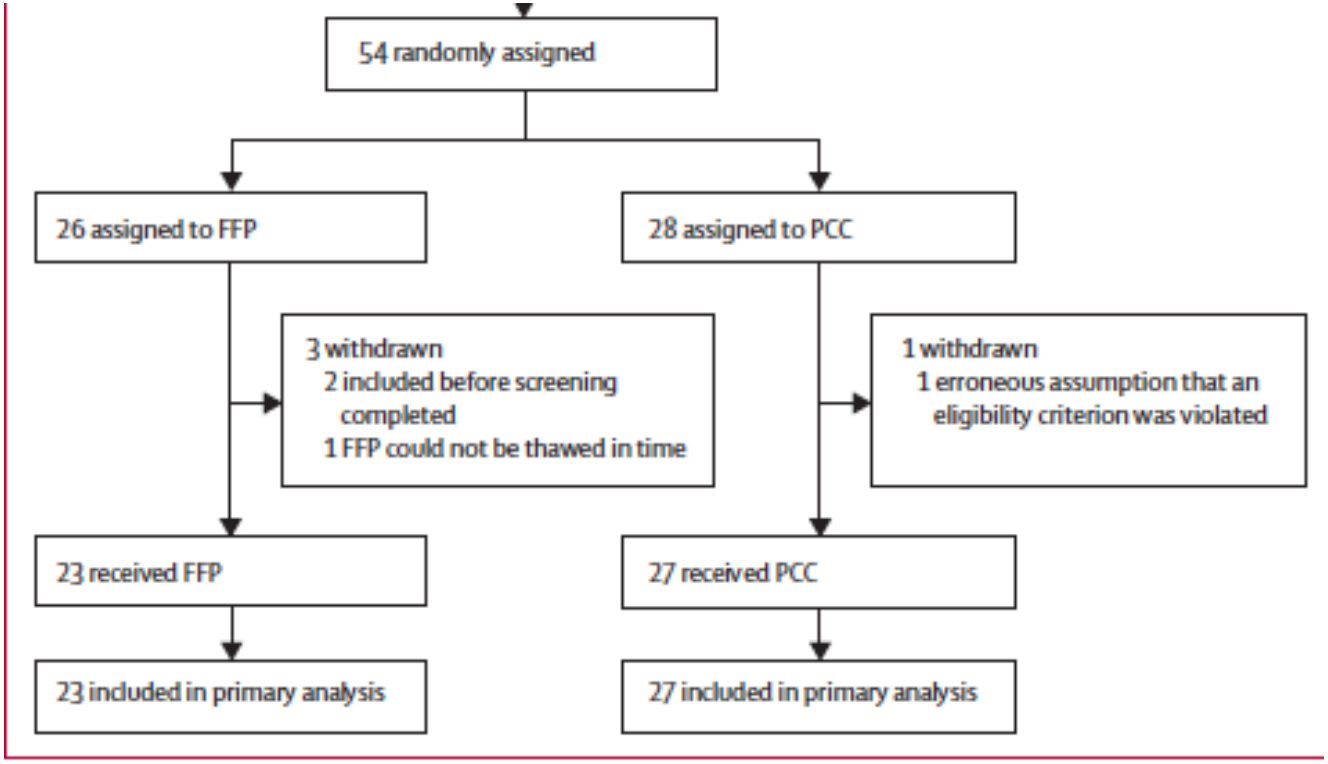
Intensive Blood-Pressure Lowering in Patients with Acute Cerebral Hemorrhage

Dans les 4.5 h réduction pression artérielle
Target 110-140 vs. 140-180





Fresh frozen plasma versus prothrombin complex concentrate in patients with intracranial haemorrhage related to vitamin K antagonists (INCH): a randomised trial



	Fresh frozen plasma (n=23)	Prothrombin complex concentrate (n=27)	Treatment effect (95% CI)	p value
Primary outcome				
INR ≤1·2 within 3 h	2 (9%)	18 (67%)	OR 30·6 (4·7 to 197·9)*	0·0003
Imaging data at 3 h¶				
Haematoma expansion (mL)	23·7 (28·4)	9·7 (20·9)	16·9 (2·5 to 31·3)‡	0·023
≥15% growth‖	16/22 (73%)**	15/26 (58%)**	OR 2·0 (0·6 to 7·3)*	0·29
≥33% growth‖	13/22 (59%)**	12 (44%)**	OR 3·8 (1·1 to 16·0)*	0·048
Imaging data at 24 h				
Haematoma expansion (mL)	22·1 (27·1)	8·3 (18·3)	16·4 (2·9 to 29·9)‡	0·018
≥15% growth or death‖	14/20 (70%)††	12/27 (44%)	OR 3·9 (1·0 to 17·6)*	0·044
≥33% growth or death‖	12/20 (60%) ††	8/27 (30%)	OR 4·8 (1·3 to 20·4)*	0·024

Protocole d'urgence de réversion de l'effet anticoagulant en cas d'hémorragie intracérébrale sous AOD

Admission

Obtenir en urgence +++

Clairance créatinine

et bilan d'hémostase (indiquer le traitement reçu)

→ **Prévenir le laboratoire d'Hémostase si la confirmation de la prise d'un AOD est nécessaire (patient non communiquant)**

↓

Si l'hémorragie intracérébrale est confirmée par l'imagerie et la prise récente (<48h) d'un AOD est confirmée ou probable
Neutraliser l'effet anticoagulant en urgence, sans attendre les résultats des tests biologiques

Si le patient reçoit le dabigatran, neutraliser le médicament par son antidote spécifique, idarucizumab (Praxbind®) 2 **injections** IV lentes de 2,5 g à 15 minutes **d'intervalle**

Si le patient reçoit un xaban,
(ou si idarucizumab n'est pas immédiatement disponible pour dabigatran)
Administrer un concentré de complexe prothrombinique (CCP)
non activé (Octaplex®, Kanokad®, Confidex®) 50 UI/kg par voie IV lente
ou CCP activé (FEIBA®) 30-50 U/kg par voie IV lente

Dementia risk after spontaneous intracerebral haemorrhage: a prospective cohort study

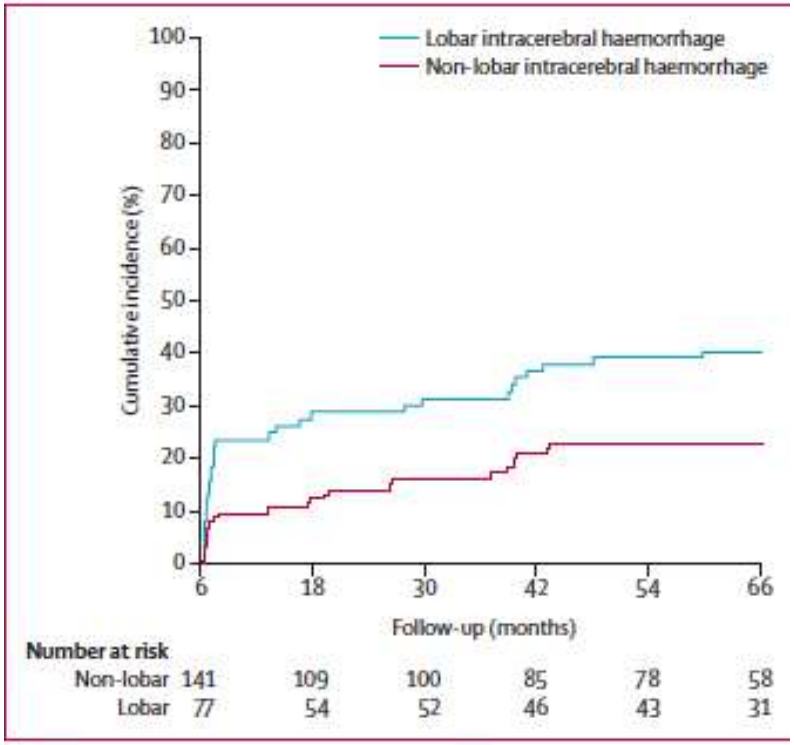


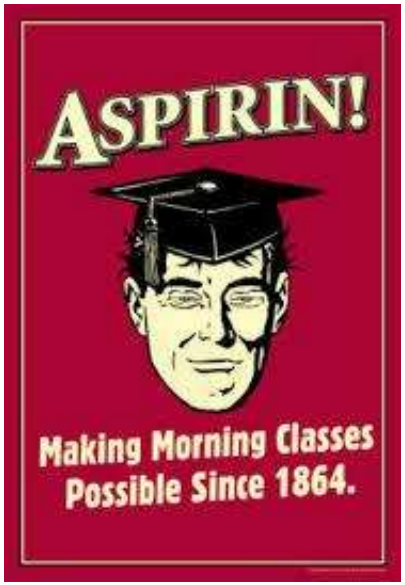
Figure 2: **Cumulative rates of new-onset dementia in patients after intracerebral haemorrhage according to lobar location**

	1 year post-intracerebral haemorrhage*	4 years post-intracerebral haemorrhage*
History of previous stroke or transient ischaemic attack		
No	14·6% (10·0–20·1)	21·8% (16·1–28·1)
Yes	15·2% (5·4–29·5)	45·5 % (27·8–61·6)
Intracerebral haemorrhage location		
Lobar	23·4% (14·6–33·3)	35·1% (24·6–45·7)
Non-lobar	9·2% (5·1–14·7)	20·2% (14·0–27·3)

Data are % (95% CI). Cumulative incidence rates of new-onset dementia were estimated with the Kalbfleisch and Prentice approach. *31 events at 1 year post-intracerebral haemorrhage and 61 events at 4 years post-intracerebral haemorrhage.

Table 2: **Cumulative incidence rates of new-onset dementia according to subgroups of interest**

PREVENTION


ASPIRIN!
Making Morning Classes
Possible Since 1864.


BAYER
ASPIRIN®
Tablette mit 500 mg Acetylsalicylsäure
20 Tabletten

Prevention

1. INTERSTROKE Lancet 2016
2. AIT Nejm Amarenco-Socrates
3. Rothwell Aspirine en prévention Secondaire
4. Pioglitazone IRIS
5. Reco ESC FA

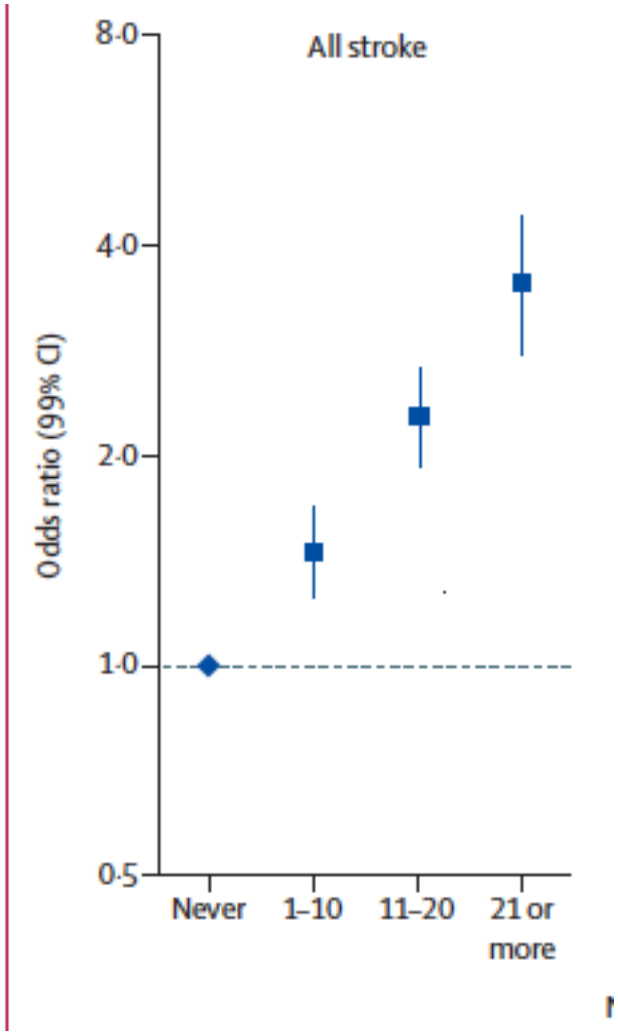
GLOBAL HEALTH

Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study

	Controls		All-stroke cases			
	≤55 years (N=4234)	>55 years (N=9238)	≤55 years (N=4216)		>55 years (N=9231)	
			OR (99% CI)	PAR (99% CI)	OR (99% CI)	PAR (99% CI)
Self-reported history of hypertension or blood pressure ≥140/90 mm Hg	1334/4234 (31·5%)	5045/9238 (54·6%)	4·51 (3·77–5·41)	49·7% (46·0–53·4)	2·55 (2·27–2·85)	46·0% (42·2–49·8)
Current smoking	1242/4231 (29·4%)	1775/9234 (19·2%)	1·66 (1·36–2·02)	16·3% (11·6–22·3)	1·70 (1·47–1·97)	10·9% (8·6–13·7)
Waist-to-hip ratio						
T2 *vs* T1	1386/4133 (33·5%)	3087/8983 (34·4%)	1·42 (1·15–1·75)	..	1·16 (1·01–1·33)	..
T3 *vs* T1	1203/4133 (29·1%)	3107/8983 (34·6%)	1·56 (1·23–1·98)	..	1·39 (1·20–1·62)	..
T2+T3 *vs* T1	..	..	..	23·5% (15·2–34·5)	..	16·0% (9·7–25·2)
Diet, mAHEI score						
T2 *vs* T1	1460/4234 (34·5%)	3118/9238 (33·8%)	0·78 (0·64–0·95)	..	0·76 (0·67–0·87)	..
T3 *vs* T1	1313/4234 (31·0%)	3132/9238 (33·9%)	0·68 (0·55–0·86)	..	0·56 (0·48–0·64)	..
T1+T2 *vs* T3	..	..	..	16·4% (7·9–30·9)	..	26·5% (20·9–33·0)
Regular physical activity	688/4232 (16·3%)	1510/9231 (16·4%)	0·60 (0·45–0·80)	35·3% (21·0–52·8)	0·60 (0·50–0·72)	35·9% (26·4–46·7)
Self-reported history of diabetes or HbA_{1c}≥6·5%	727/4229 (17·2%)	2230/9233 (24·2%)	1·29 (1·04–1·61)	5·6% (2·5–12·1)	1·14 (1·01–1·30)	3·6% (1·4–8·8)
Alcohol intake	..	..	..	10·9% (6·1–18·7)		4·1% (1·7–9·4)
Low or moderate	797/4229 (18·8%)	1349/9230 (14·6%)	1·27 (1·03–1·56)	..	1·09 (0·94–1·27)	..
High or heavy episodic	231/4229 (5·5%)	471/9230 (5·1%)	2·20 (1·49–3·23)	..	2·14 (1·54–2·96)	..
Psychosocial factors	..	..	2·36 (1·60–3·50)	22·8% (14·8–33·3)	2·06 (1·59–2·68)	15·3% (10·5–21·8)
Cardiac causes	73/4234 (1·7%)	595/9238 (6·4%)	4·56 (2·81–7·41)	4·9% (3·8–6·3)	2·94 (2·45–3·53)	10·8% (9·4–12·4)
ApoB/ApoA1 ratio						
T2 *vs* T1	1219/3702 (32·9%)	2831/8224 (34·4%)	1·30 (1·06–1·60)	..	1·28 (1·13–1·46)	..
T3 *vs* T1	1275/3702 (34·4%)	2655/8224 (32·3%)	2·01 (1·62–2·49)	..	1·79 (1·56–2·05)	..
T2+T3 *vs* T1	..	..	..	30·8% (22·6–40·5)	..	25·6% (20·1–31·9)
Composite PAR for all ten risk factors	..	..	..	92·2% (88·8–94·6)	..	90·0% (87·3–92·1)

A Wald test was used to test for interaction between risk factor × age subgroup for all stroke, and $p_{interaction}$ was significant (p<0·01) for hypertension, waist-to-hip ratio, diet, and cardiac causes using logistic regression. Apo=apolipoprotein. mAHEI=modified Alternative Healthy Eating Index. OR=odds ratio. PAR=population attributable risk. T=tertile.

***Table 4*: Risk factors for all stroke (ischaemic and intracerebral haemorrhage) by age group**


All stroke
8·0
4·0
2·0
1·0
0·5
Odds ratio (99% CI)
Never
1–10
11–20
21 or more

Effects of aspirin on risk and severity of early recurrent stroke after transient ischaemic attack and ischaemic stroke: time-course analysis of randomised trials

- Réduction de 60% du risque de récidive: 2.4% vs. 1%.
- Réduction de la sévérité des IC.
- Effet majeur sur les récidives précoces.

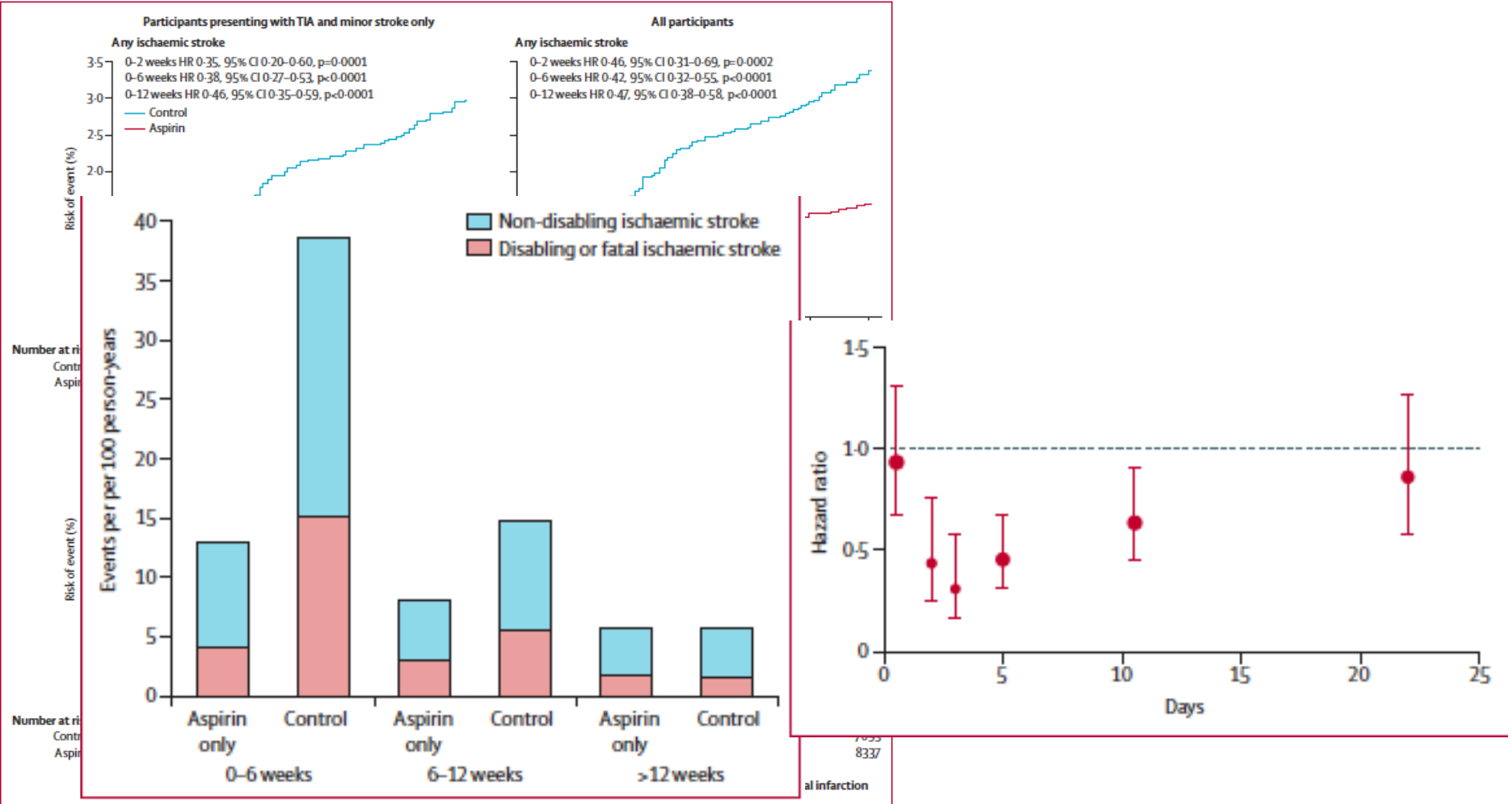
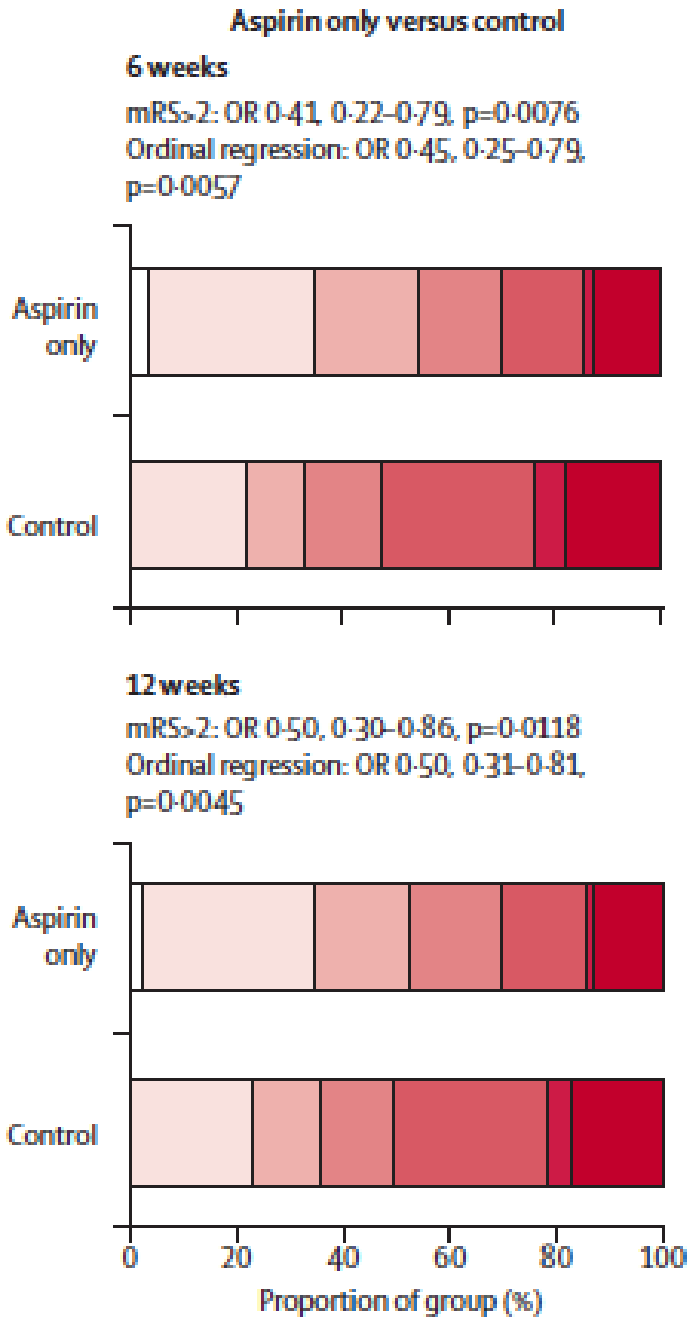


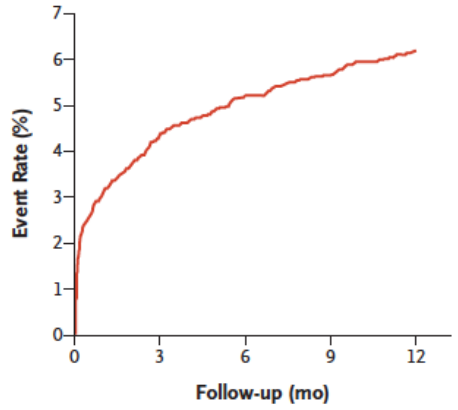
Figure 2: **Pooled analysis of the effect of aspirin only versus control in secondary prevention after transient ischaemic attack and ischaemic stroke on the absolute risk of recurrent ischaemic stroke**

Time course of treatment effect interaction: $p_{interaction}<0{\cdot}0001$ for both outcomes.


Aspirin only versus control
6 weeks
mRS>2: OR 0·41, 0·22–0·79, p=0·0076
Ordinal regression: OR 0·45, 0·25–0·79, p=0·0057
Aspirin only
Control
12 weeks
mRS>2: OR 0·50, 0·30–0·86, p=0·0118
Ordinal regression: OR 0·50, 0·31–0·81, p=0·0045
Aspirin only
Control
0
20
40
60
80
100
Proportion of group (%)

One-Year Risk of Stroke after Transient Ischemic Attack or Minor Stroke

Outcome	Patients (N=4583)
	no. (%)
Primary outcome	
Major cardiovascular events	274 (6.2)
Death from cardiovascular causes	25 (0.6)
Nonfatal stroke	210 (4.7)
Nonfatal acute coronary syndrome	39 (0.9)
Secondary outcomes	
Death from any cause	80 (1.8)
Stroke or TIA	533 (12.0)
Stroke	224 (5.1)
TIA	326 (7.4)
Intracerebral hemorrhage	16 (0.4)
Acute coronary syndrome	46 (1.1)
Myocardial infarction	16 (0.4)
Bleeding	87 (2.0)
Moderately severe bleeding†	16 (0.4)
Major bleeding‡	18 (0.4)

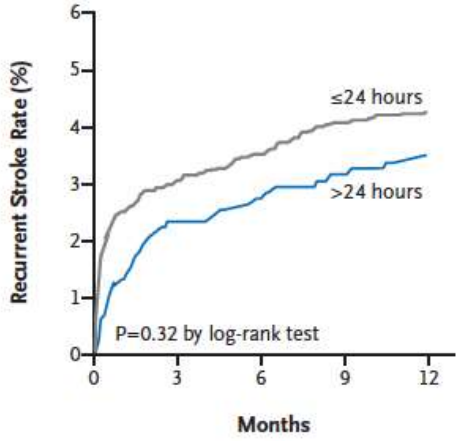


No. at Risk					
	4583	4160	3961	3918	3551

Figure 1. Cumulative Incidence of the Composite Outcome in the Overall Population.

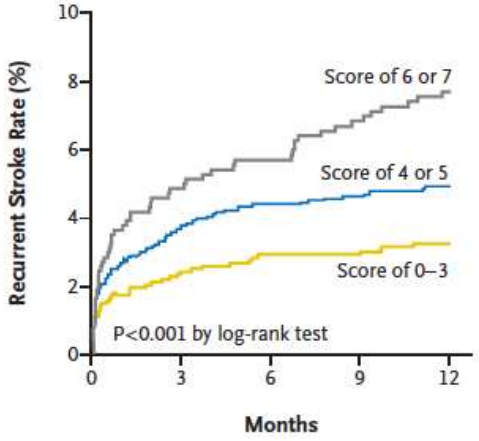
The composite outcome included stroke, an acute coronary syndrome, and death from cardiovascular causes.

A Rate of Recurrent Stroke According to Time from Symptom Onset to Evaluation by Stroke Specialist



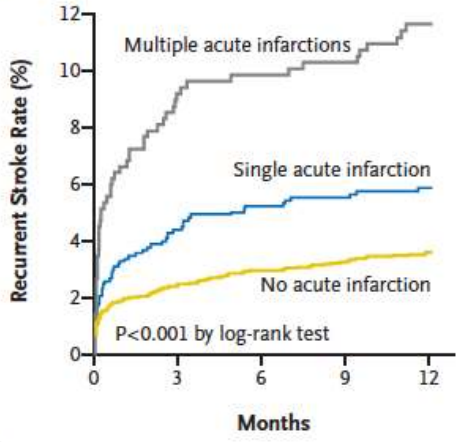
No. at Risk					
≤24 hours	3593	3289	3101	3067	2965
>24 hours	990	926	888	881	850

B Rate of Recurrent Stroke According to ABCD² Stroke Risk Score



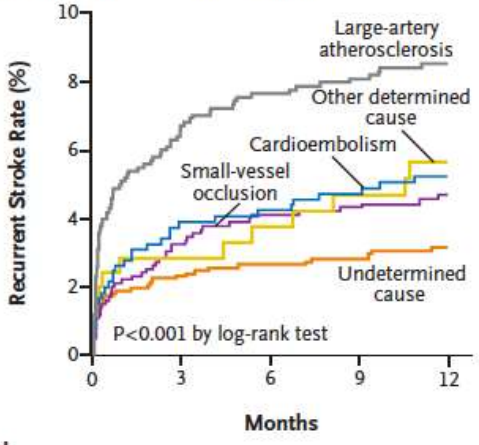
No. at Risk					
Score of 0–3	1294	1221	1175	1166	1063
Score of 4 or 5	1851	1701	1633	1625	1484
Score of 6 or 7	745	684	657	642	596

C Rate of Recurrent Stroke According to Finding on Brain Imaging



No. at Risk					
No acute infarction	2946	2699	2570	2542	2289
Single acute infarction	995	926	894	885	821
Multiple acute infarctions	481	414	397	394	357

D Rate of Recurrent Stroke According to Cause of TIA or Minor Stroke (TOAST Classification)



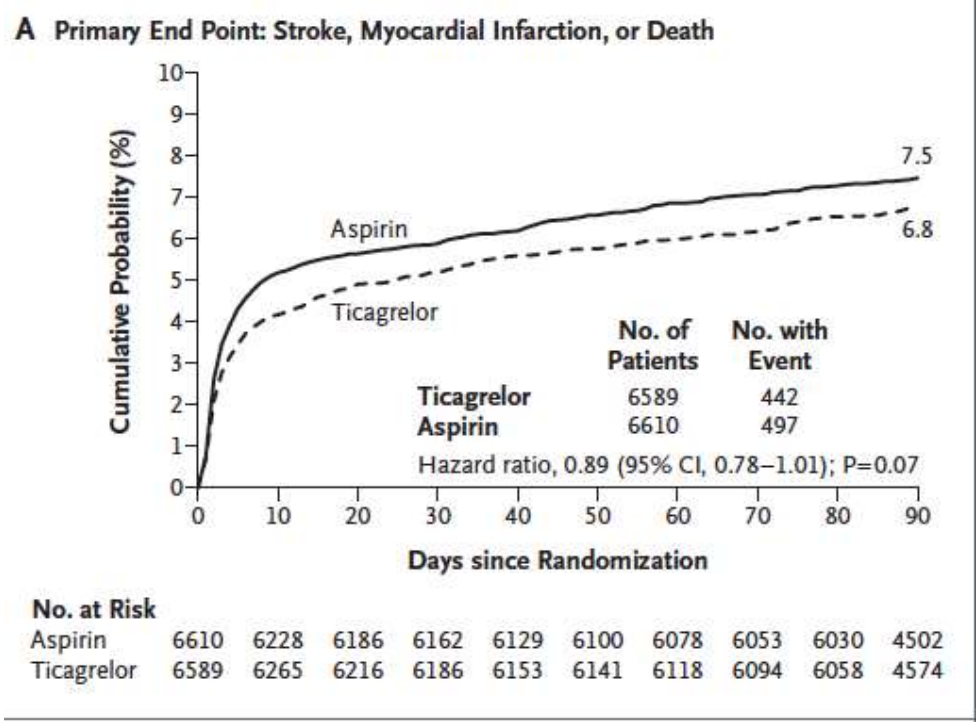
No. at Risk					
Large-artery atherosclerosis	987	892	863	853	799
Small-vessel occlusion	983	905	862	857	790
Cardioembolism	641	584	570	561	494
Other determined cause	244	214	205	198	184
Undetermined cause	1354	1263	1206	1199	1085

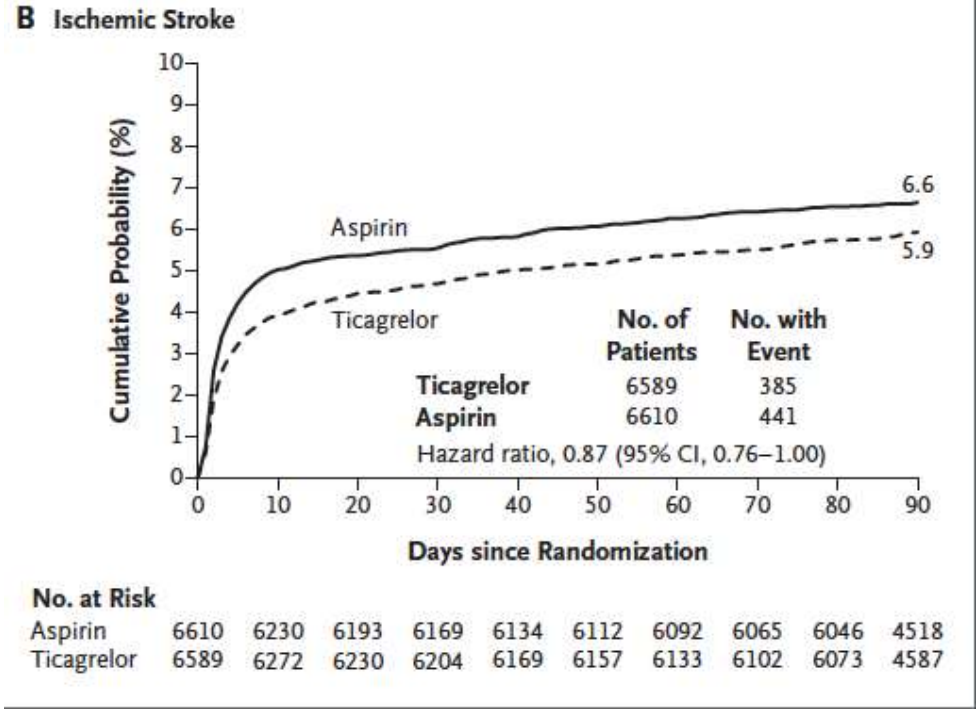
ORIGINAL ARTICLE

Ticagrelor versus Aspirin in Acute Stroke or Transient Ischemic Attack

Ticagrelor 90 x2 vs. ASA 100 mg

- dans les 24 hrs
- Pendant 3 semaines
- Suivi 3 Mois





REDUCTION DE 0.7% endpoint Global et IC

-NS sur critère primaire

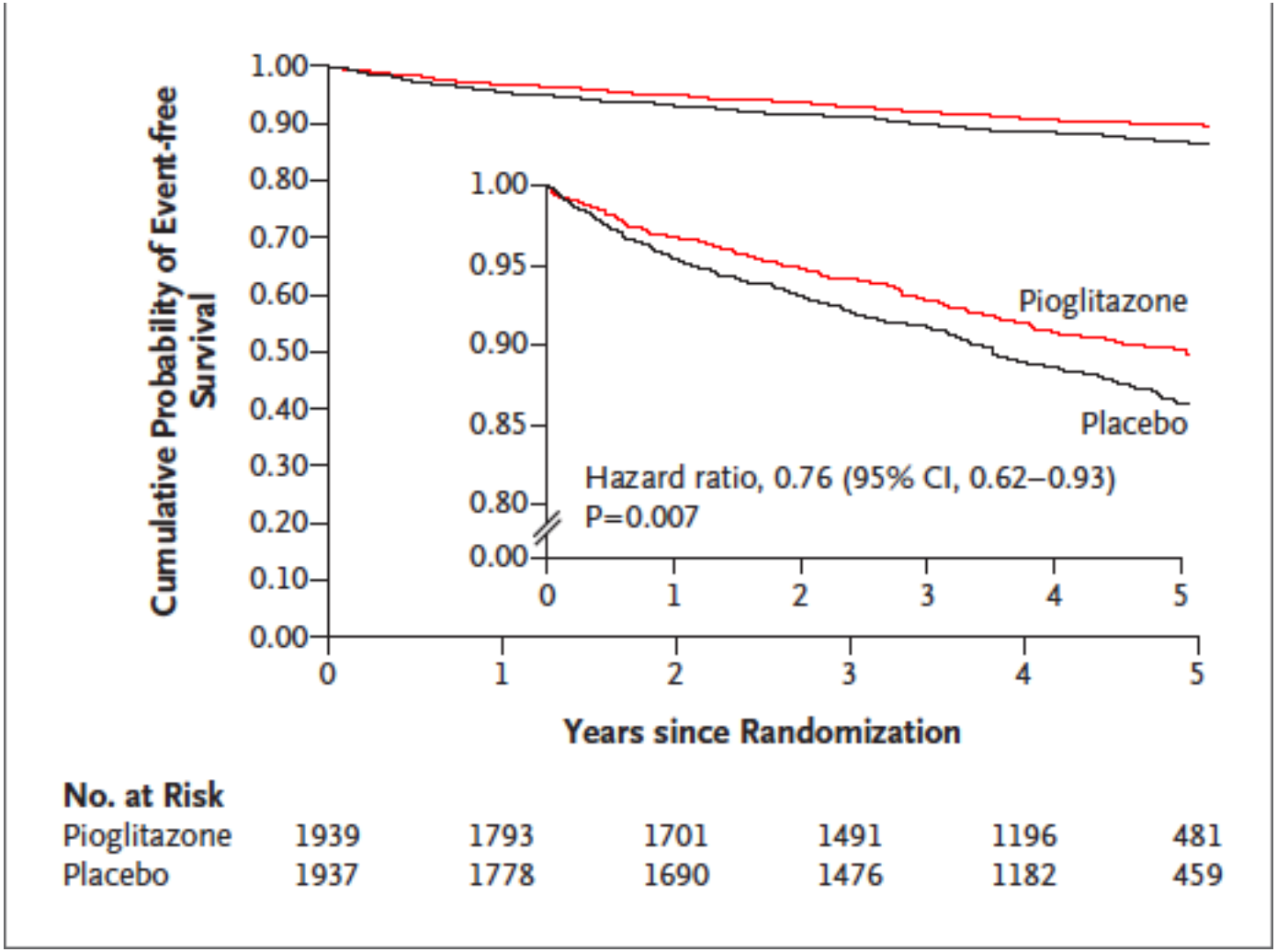
- S sur IC p=0.046

Pioglitazone after Ischemic Stroke or Transient Ischemic Attack

- Résistance à l Insuline mais pas de diabète-Score HOMA-IR
- Prévention secondaire après AIT ou Infarctus Cérébral
- Endpoint AVC ou IDM

Table 2. Primary and Secondary Outcomes.

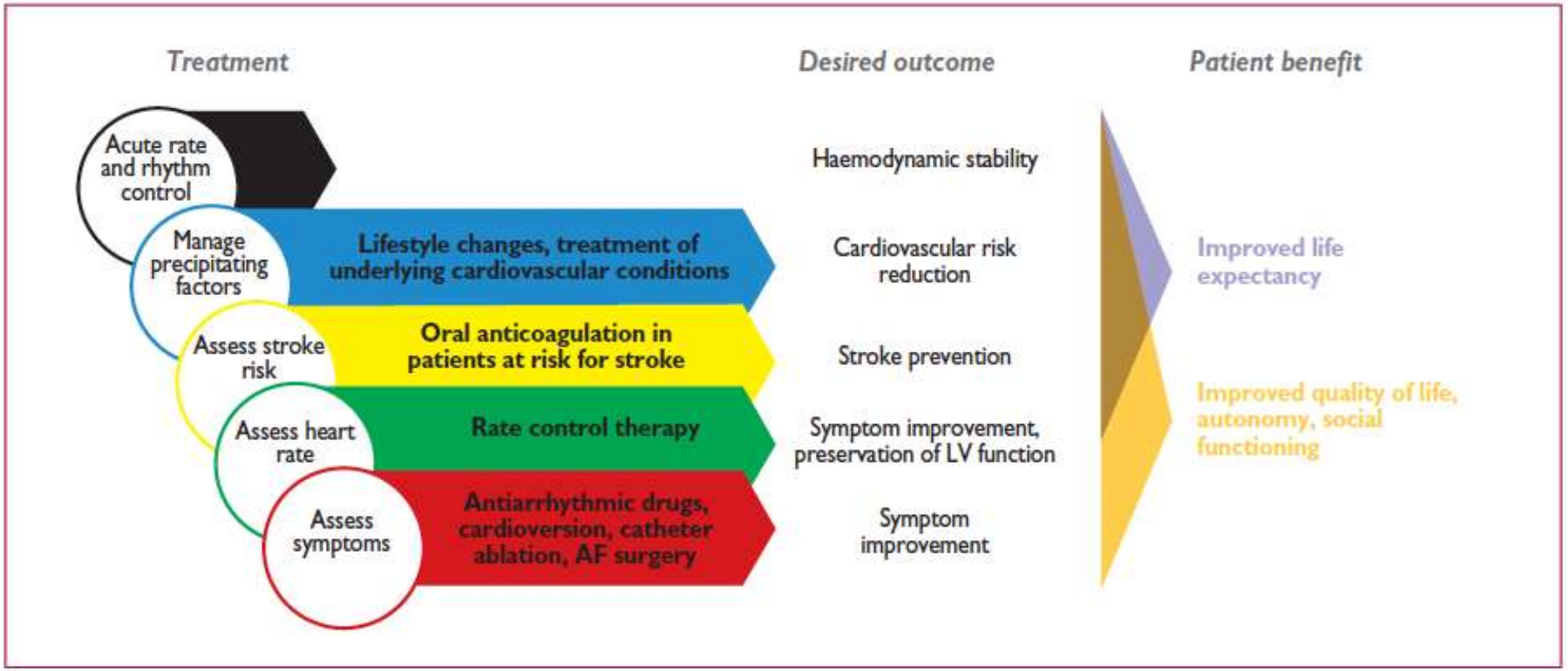
Outcome	Pioglitazone (N=1939)	Placebo (N=1937)	Hazard Ratio (95% CI)*	Adjusted P Value†
	no. of patients (%)			
Primary outcome				
Stroke or myocardial infarction‡	175 (9.0)	228 (11.8)	0.76 (0.62– 0.93)	0.007
Stroke	123 (6.3)	150 (7.7)		
Fatal	9 (0.5)	13 (0.7)		
Nonfatal	114 (5.9)	137 (7.1)		
Myocardial infarction	52 (2.7)	78 (4.0)		
Fatal	7 (0.4)	14 (0.7)		
Nonfatal	45 (2.3)	64 (3.3)		
Secondary outcome§				
Stroke	127 (6.5)	154 (8.0)	0.82 (0.61–1.10)	0.19
Acute coronary syndrome: myocardial infarction or unstable angina	96 (5.0)	128 (6.6)	0.75 (0.52–1.07)	0.11
Stroke, myocardial infarction, or serious heart failure¶	206 (10.6)	249 (12.9)	0.82 (0.65–1.05)	0.11
Diabetes mellitus	73 (3.8)	149 (7.7)	0.48 (0.33–0.69)	<0.001
Death from any cause	136 (7.0)	146 (7.5)	0.93 (0.73–1.17)	0.52



No. at Risk

Pioglitazone	1939	1793	1701	1491	1196	481
Placebo	1937	1778	1690	1476	1182	459

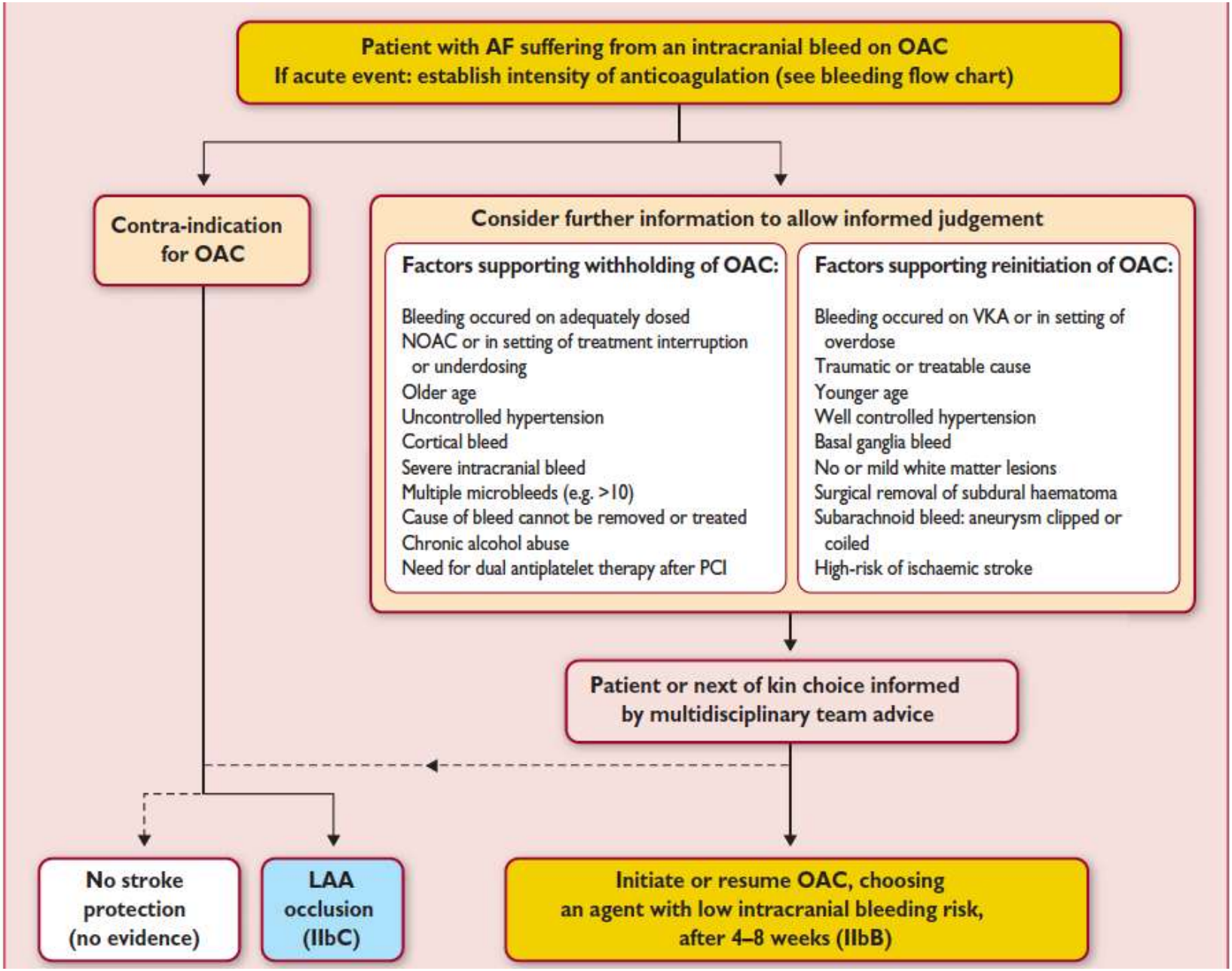
Fibrillation Auriculaire et AVC
Recommandations Européennes-ESC



AF = atrial fibrillation; LV = left ventricular.

Recommendations	Class[a]	Level[b]
Opportunistic screening for AF is recommended by pulse taking or ECG rhythm strip in patients >65 years of age.	I	B
In patients with TIA or ischaemic stroke, screening for AF is recommended by short-term ECG recording followed by continuous ECG monitoring for at least 72 hours.	I	B
It is recommended to interrogate pacemakers and ICDs on a regular basis for atrial high rate episodes (AHRE). Patients with AHRE should undergo further ECG monitoring to document AF before initiating AF therapy.	I	B
In stroke patients, additional ECG monitoring by long-term non-invasive ECG monitors or implanted loop recorders should be considered to document silent atrial fibrillation.	IIa	B
Systematic ECG screening may be considered to detect AF in patients aged >75 years, or those at high stroke risk.	IIb	B

Anticoagulation with heparin or LMWH immediately after an ischaemic stroke is not recommended in AF patients.	III (harm)	A
In patients who suffer a TIA or stroke while on anticoagulation, adherence to therapy should be assessed and optimized.	IIa	C
In patients who suffer a moderate-to-severe ischaemic stroke while on anticoagulation, anticoagulation should be interrupted for 3–12 days based on a multidisciplinary assessment of acute stroke and bleeding risk.	IIa	C
In AF patients who suffer a stroke, aspirin should be considered for prevention of secondary stroke until the initiation or resumption of oral anticoagulation.	IIa	B
Systemic thrombolysis with rtPA is not recommended if the INR is above 1.7 (or, for patients on dabigatran, if aPTT is outside normal range).	III (harm)	C
NOACs are recommended in preference to VKAs or aspirin in AF patients with a previous stroke.	I	B
After TIA or stroke, combination therapy of OAC and an antiplatelet is not recommended.	III (harm)	B
After intracranial haemorrhage, oral anticoagulation in patients with AF may be reinitiated after 4–8 weeks provided the cause of bleeding or the relevant risk factor has been treated or controlled.	IIb	B


Patient with AF suffering from an intracranial bleed on OAC
If acute event: establish intensity of anticoagulation (see bleeding flow chart)
Contra-indication for OAC
Consider further information to allow informed judgement
Factors supporting withholding of OAC:
Bleeding occured on adequately dosed NOAC or in setting of treatment interruption or underdosing
Older age
Uncontrolled hypertension
Cortical bleed
Severe intracranial bleed
Multiple microbleeds (e.g. >10)
Cause of bleed cannot be removed or treated
Chronic alcohol abuse
Need for dual antiplatelet therapy after PCI
Factors supporting reinitiation of OAC:
Bleeding occured on VKA or in setting of overdose
Traumatic or treatable cause
Younger age
Well controlled hypertension
Basal ganglia bleed
No or mild white matter lesions
Surgical removal of subdural haematoma
Subarachnoid bleed: aneurysm clipped or coiled
High-risk of ischaemic stroke
Patient or next of kin choice informed by multidisciplinary team advice
No stroke protection (no evidence)
LAA occlusion (IIbC)
Initiate or resume OAC, choosing an agent with low intracranial bleeding risk, after 4–8 weeks (IIbB)

Sensitivity analysis: OAC-treated standard care patients

ICH patients with AF treated either by standard medical care or LAAO.
All standard care patients started oral anticoagulant within 180 days after ICH

Clinical outcome HR by Cox-regression analysis n = 103 in each PS-matched patient group	LAAO vs. Standard care Hazard ratio (95%CI)	Relative risk reduction (%)
Ischemic stroke/major bleeding/mortality	0.26 (0.09-0.80)	74%
Ischemic stroke	0.32 (0.06-1.56)	68%
Major bleeding	0.66 (0.11-3.94)	34%
ICH	0.51 (0.05-5.65)	49%
Mortality	0.28 (0.06-1.36)	72%

Conclusion

- These study data suggests transcatheter LAAO to be a beneficial stroke prevention strategy in patients with atrial fibrillation and prior intracerebral hemorrhage
- The results should be confirmed in a randomized clinical trial
- STROKECLOSE – a randomized clinical trial – will start in the Nordic countries in 2016

CLOSE: Closure of patent foramen ovale, oral anticoagulants or antiplatelet therapy to prevent stroke recurrence: Study design

Inclusion criteria

- Males or females, 16 ≤ age ≤ 60 years.
- Recent (≤6 months) ischaemic stroke (or retinal ischaemia), initial or recurrent, confirmed by cerebral imaging (presence of signs of recent infarction corresponding to the clinical signs) regardless of the duration of symptoms (less than or greater than 24 h).
- Modified Rankin score ≤ 3.
- Absence of another identifiable cause of stroke (or retinal ischaemia) on a thorough aetiological work.
- Presence of a PFO with at least one of the following characteristics:
  - PFO with large shunt > 30 microbubbles on TTE or TEE detected either spontaneously or exclusively during provocation manoeuvres.
  - PFO associated with atrial septal aneurysm on TEE: base of aneurysm ≥ 15 mm and excursion > 10 mm.

FERMETURE + antiagrégant vs ANTIAGREGANT vs. ANTICOAGULANT ORAL AVK ou AOD

SUIVI 5 ANS

RECIDIVE AVC
Présentation à l ESOC

FUTUR/PREVENTION

- 1- Antiagrégant
  - Analyse sous groupe SOCRATES-Atherosclerosis+++
  - POINT ASA+CDG vs. ASA
  - Autres: PARFAIT: études inh liaison plaquettes/thrombine…
- 2- AOD pour les Infarctus Cérébraux de cause indéterminée
- 3- Hypocholestérolémiant: TST, PSK-9

CONCLUSIONS

- AVC ISCHEMIQUE
  - PHASE AIGUE:
    - Pas de critère de sélection supplémentaire pour la thrombectomie
    - Time is brain mais pas de bénéfice/mobile stroke unit
    - Aspirine réduit rsq récidive précoce et sévérité
  - PREVENTION
    - AIT et Risque d'AVC
    - Echec Ticagrelor mais à suivre/atherome + autres molécules
    - Cet année CLOSE

- AVC hémorragique:
  - Echec contrôle +++ TA<140 et transfusion plaquettes / patient/ antiagrégants
  - Codification des traitement hémostatiques
    - Complexe prothrombinique et Praxbind