



EA4184
UFR Sciences de Santé Dijon
Université de Bourgogne

AVC gériatriques

Yannick Béjot



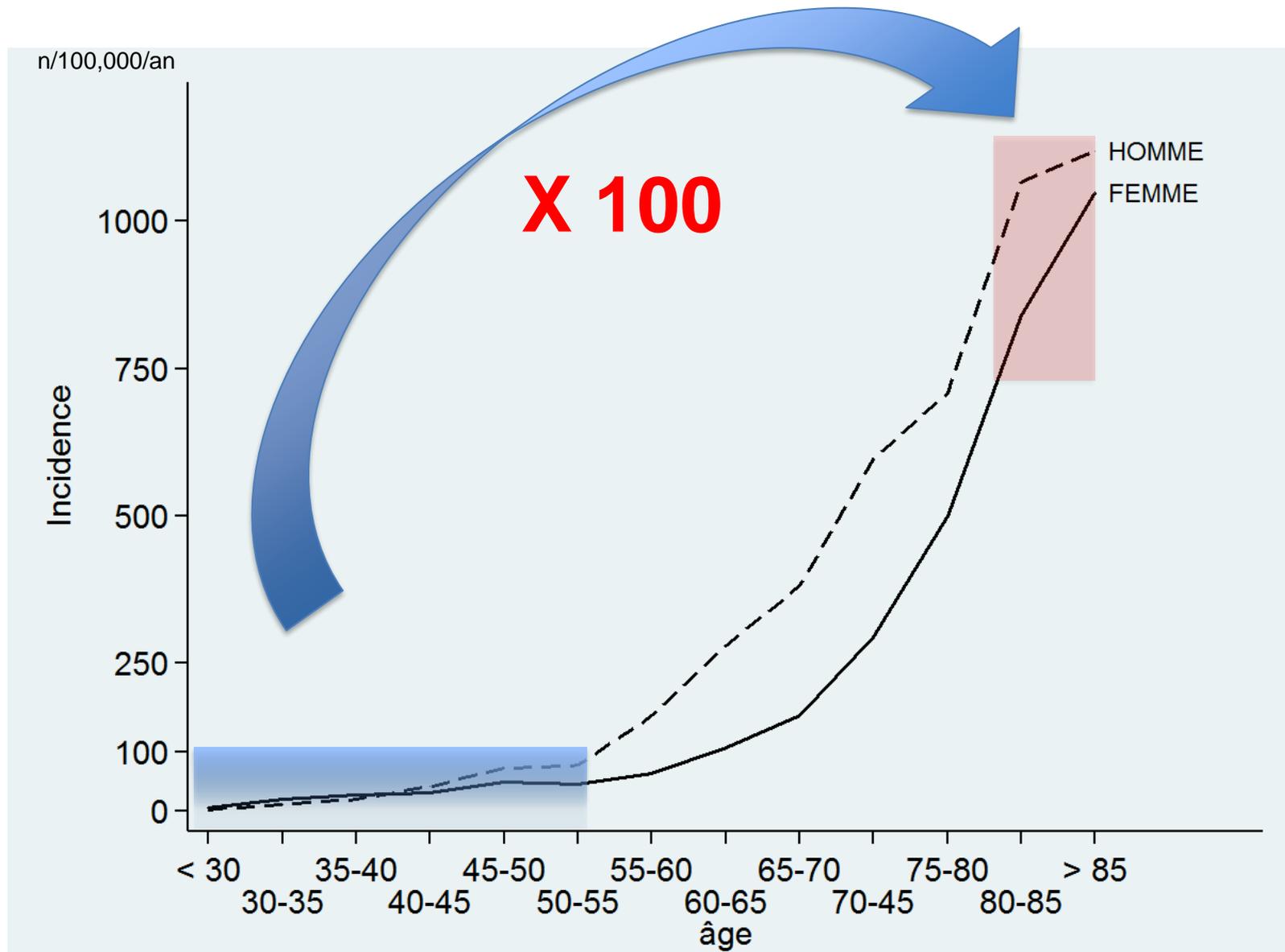
UNE TRIPLE URGENCE

- **Urgence épidémiologique**
- **Urgence de de prise en charge aigue**
- **Urgence de prévention**

UNE TRIPLE URGENCE

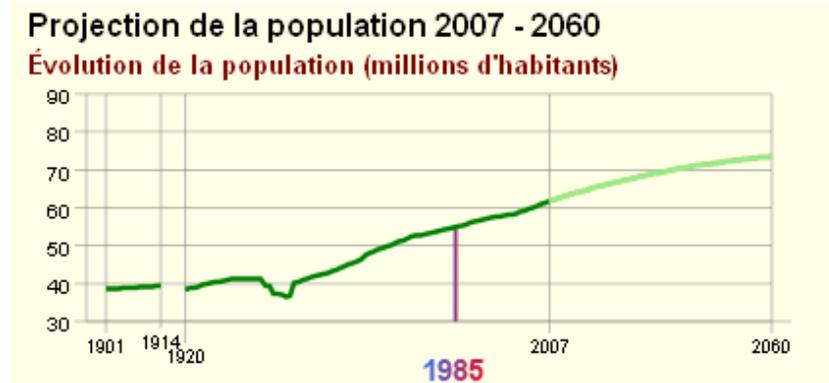
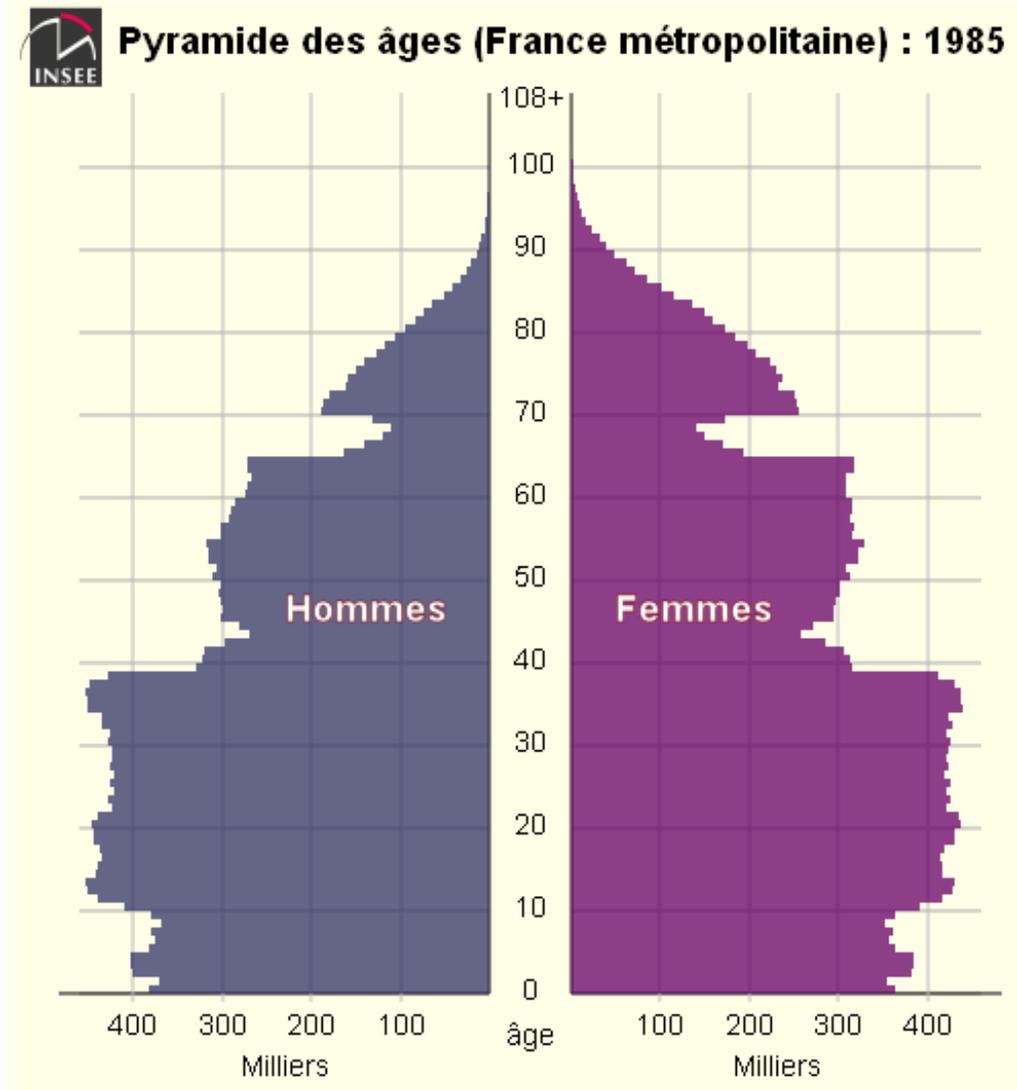
- **Urgence épidémiologique**
- Urgence de de prise en charge aigue
- Urgence de prévention

Incidence des AVC – Effet de l'âge

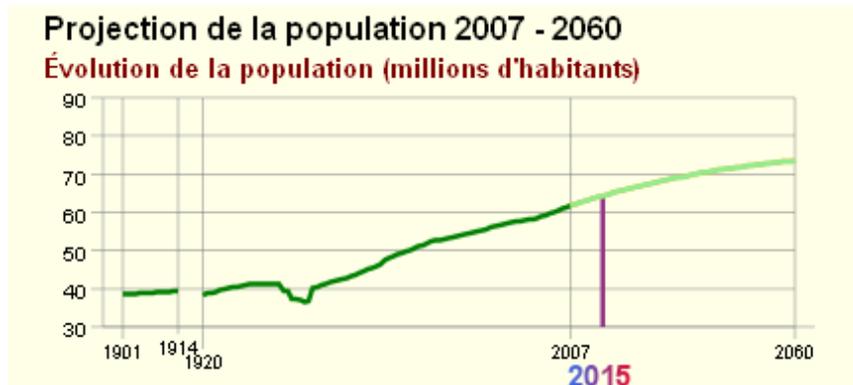
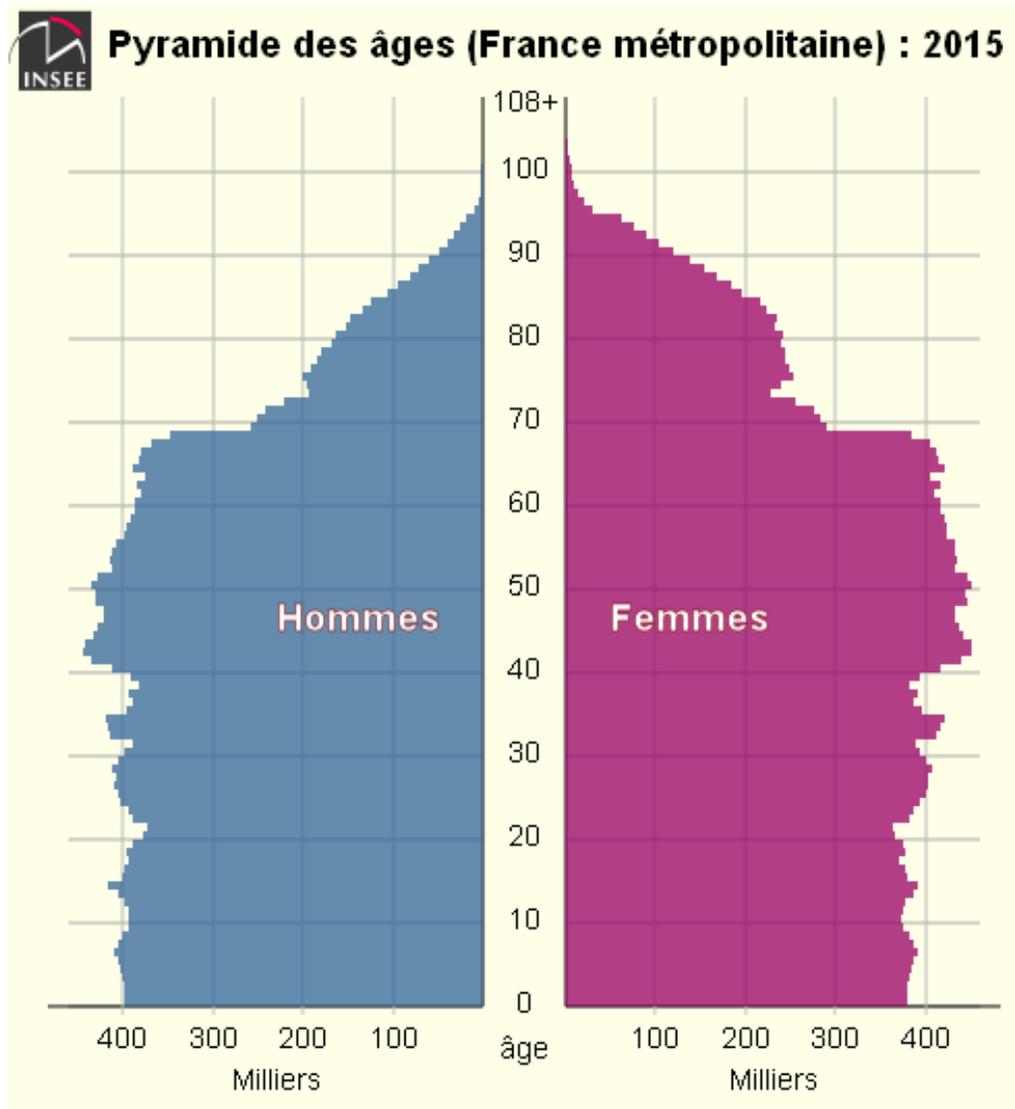


Béjot et al., 2013

Le vieillissement de la population

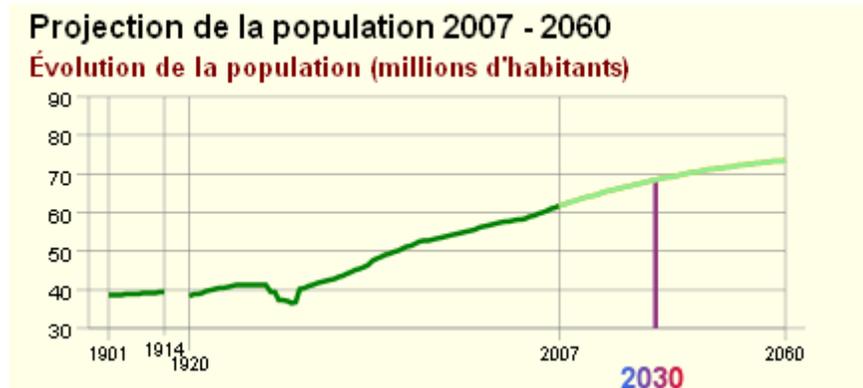
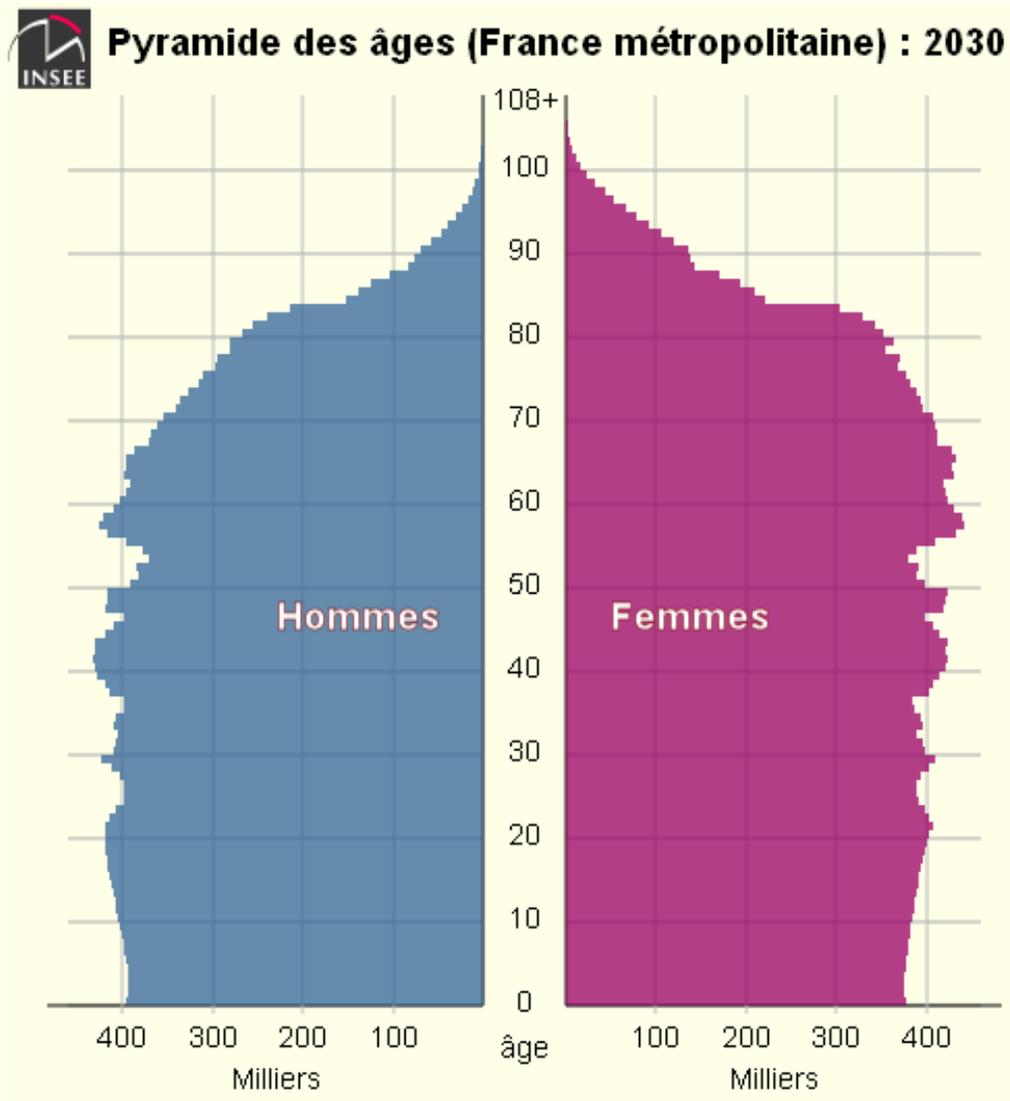


Le vieillissement de la population

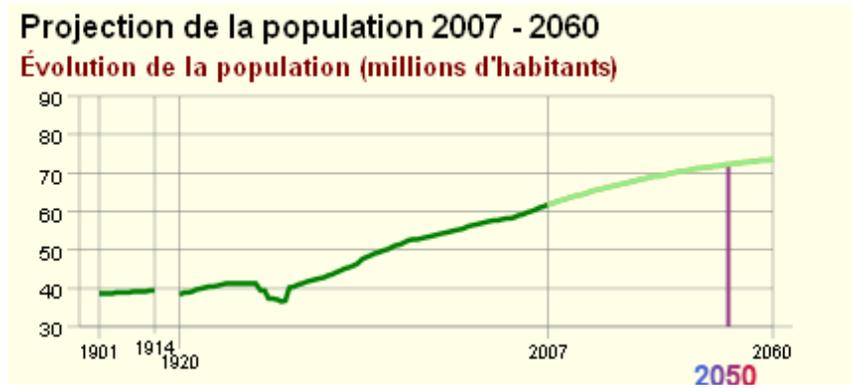
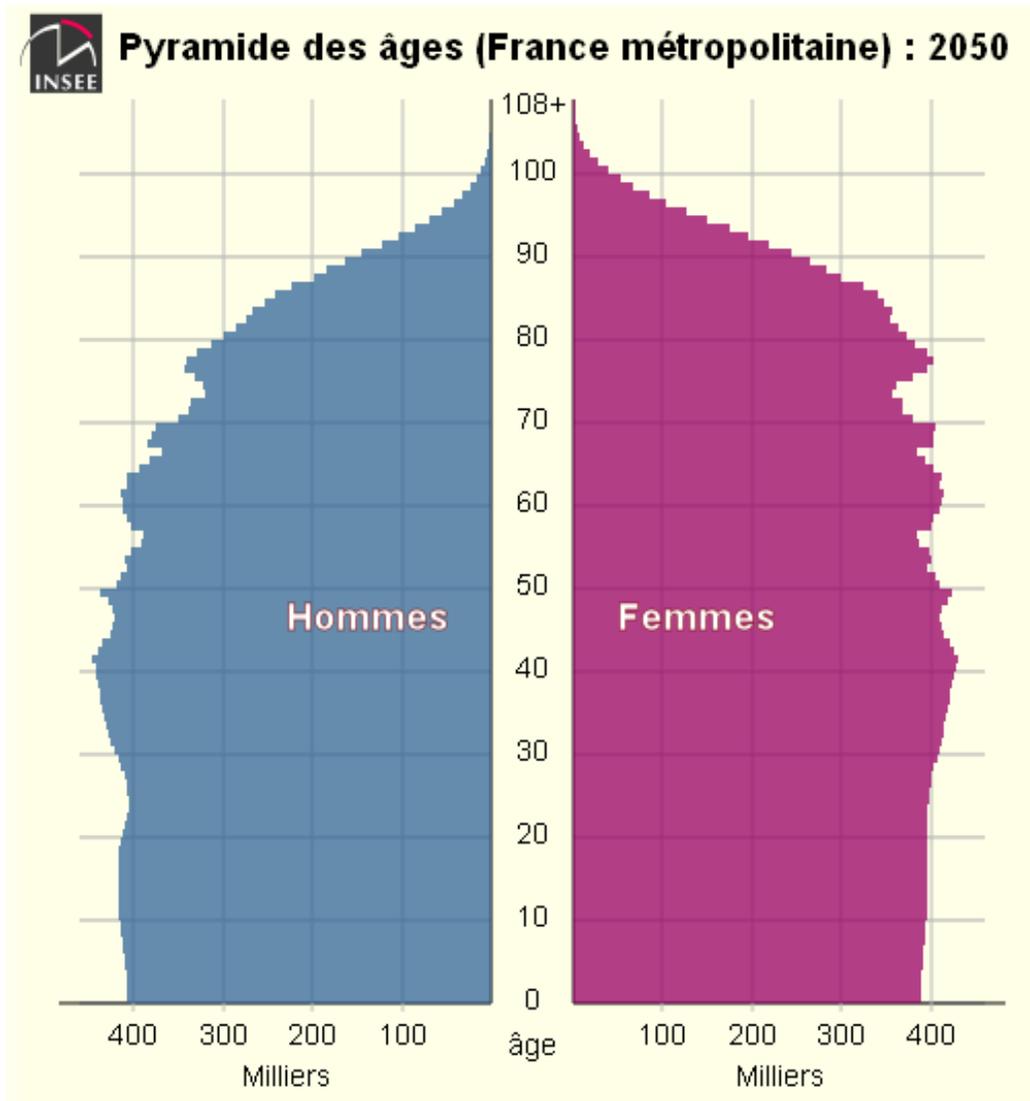


15.000 centenaires

Le vieillissement de la population



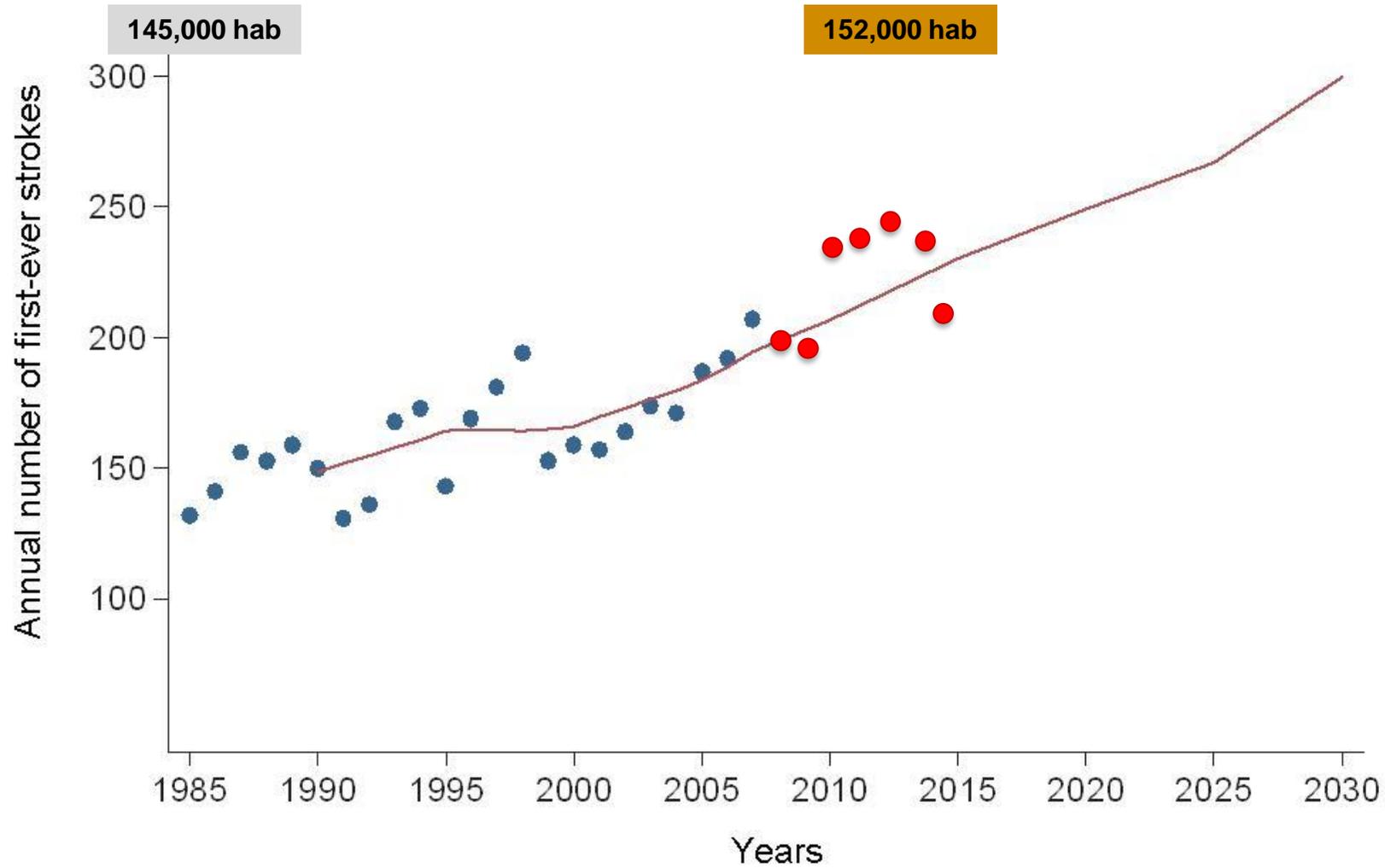
Le vieillissement de la population



**Age moyen = 45 ans
150.000 centenaires**

Evolution temporelle des AVC

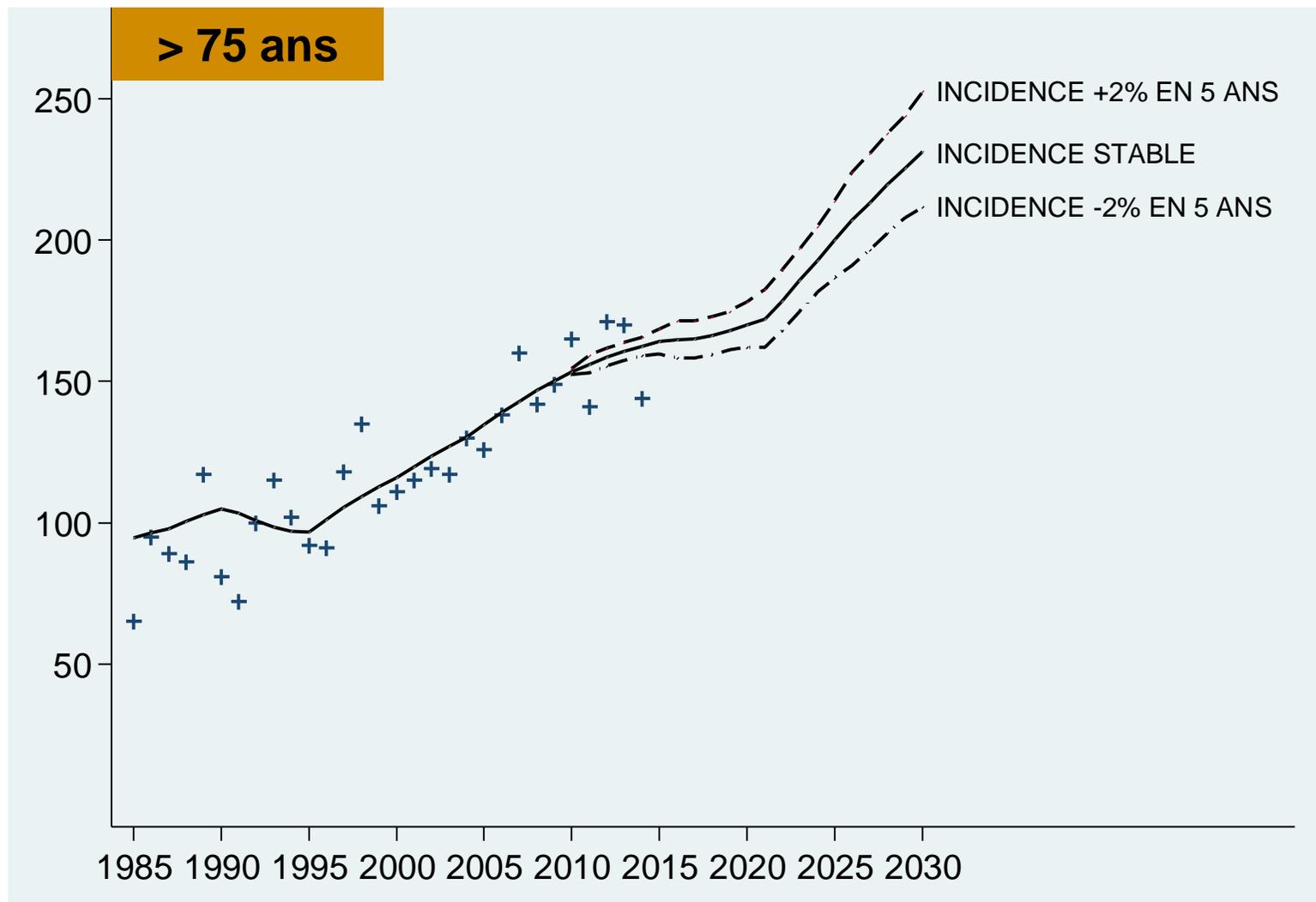
Registre Dijonnais des AVC



Béjot et al., in press

Evolution temporelle des AVC

Registre Dijonnais des AVC



2014 : 58%
2030 : 70%

Evolution temporelle des AVC

Global and regional burden of stroke during 1990–2010: findings from the Global Burden of Disease Study 2010

Valery L Feigin, Mohammad H Forouzanfar, Rita Krishnamurthi, George A Mensah, Myles Connor, Derrick A Bennett, Andrew E Moran, Ralph L Sacco, Laurie Anderson, Thomas Truelsen, Martin O'Donnell, Narayanaswamy Venketasubramanian, Suzanne Barker-Collo, Carlene M M Lawes, Wenzhi Wang, Yukito Shinohara, Emma Witt, Majid Ezzati, Mohsen Naghavi, Christopher Murray, on behalf of the Global Burden of Diseases, Injuries, and Risk Factors Study 2010 (GBD 2010) and the GBD Stroke Experts Group*

	1990		2005		2010		p value
	n	Rate (95% CI)	n	Rate (95% CI)	n	Rate (95% CI)	
(Continued from previous page)							
Globally							
<75 years							
Incidence	6 353 868	159.22 (145.32–174.98)	9 288 048	167.45 (150.96–187.11)	10 469 624	168.75 (152.43–187.09)	0.208
Prevalence	13 234 062	324.26 (288.74–374.96)	20 187 246	358.58 (317.58–412.79)	23 052 804	366.93 (328.04–420.66)	0.086
MIR	..	0.359 (0.318–0.409)	..	0.293 (0.249–0.332)	..	0.254 (0.212–0.287)	<0.001
DALYs lost	63 991 864	1543.96 (1452.03–1728.25)	74 855 520	1326.17 (1172.08–1388.74)	73 293 552	1163.448 (1011.43–1232.19)	<0.001
Mortality	2 301 435	57.38 (54.12–64.27)	2 734 251	49.16 (43.60–51.55)	2 668 499	42.89 (37.65–45.81)	<0.001
≥75 years							
Incidence	3 725 067	3173.50 (2932.14–3422.23)	5 446 077	3082.97 (2819.52–3372.55)	6 424 911	3113.00 (2850.95–3403.57)	0.361
Prevalence	4 681 276	3974.37 (3609.66–4441.23)	8 308 337	4700.18 (4239.37–5256.84)	9 972 153	4835.38 (4382.63–5433.92)	0.005
MIR	..	0.634 (0.575–0.709)	..	0.543 (0.476–0.607)	..	0.500 (0.439–0.560)	<0.001
DALYs	22 018 520	18665.35 (17 464.55–20 408.51)	27 096 178	15 300.36 (13 987.78–16 317.62)	28 938 754	14 053.63 (12 761.98–15 088.12)	<0.001
Mortality	2 359 013	2033.21 (1888.78–2233.65)	2 950 719	1678.65 (1528.60–1807.22)	3 205 682	1545.29 (1412.76–1685.12)	<0.001

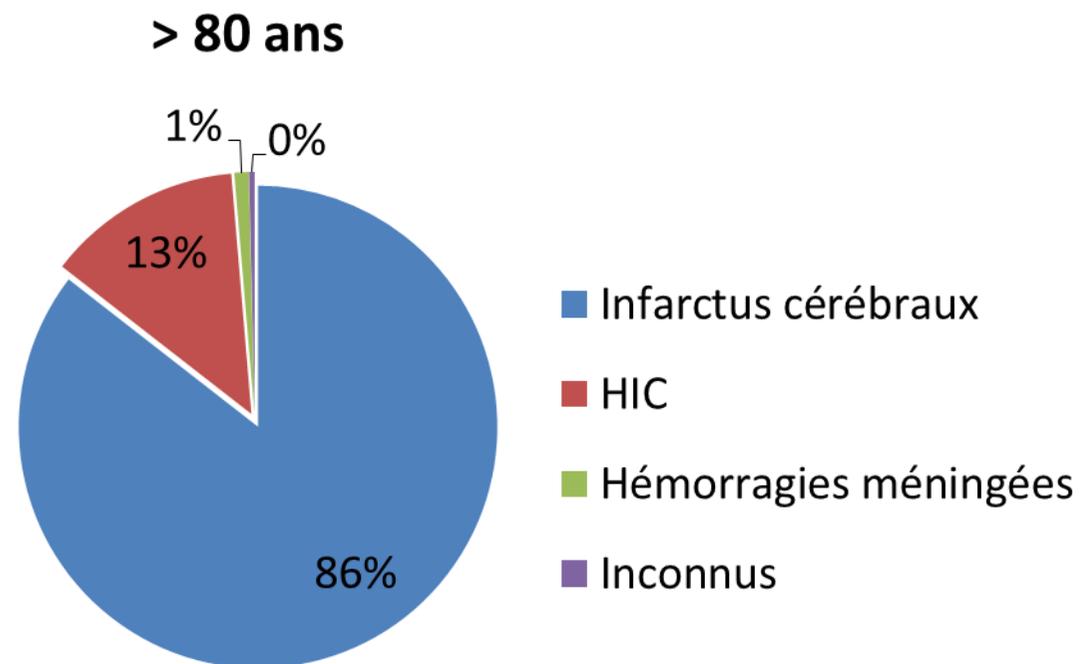
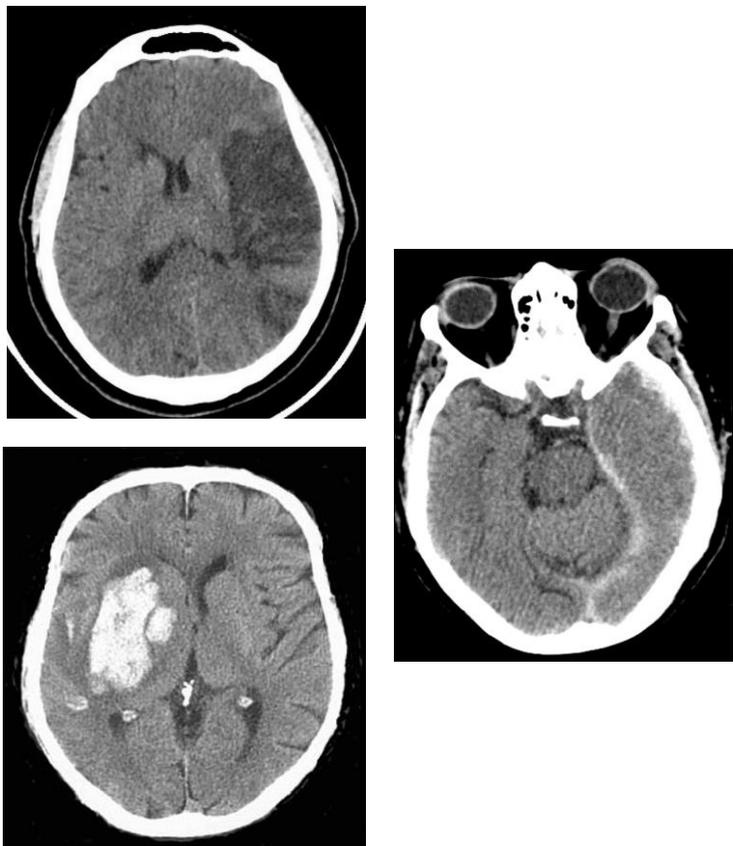


UNE TRIPLE URGENCE

- Urgence épidémiologique
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- Urgence de prévention

Distribution des AVC

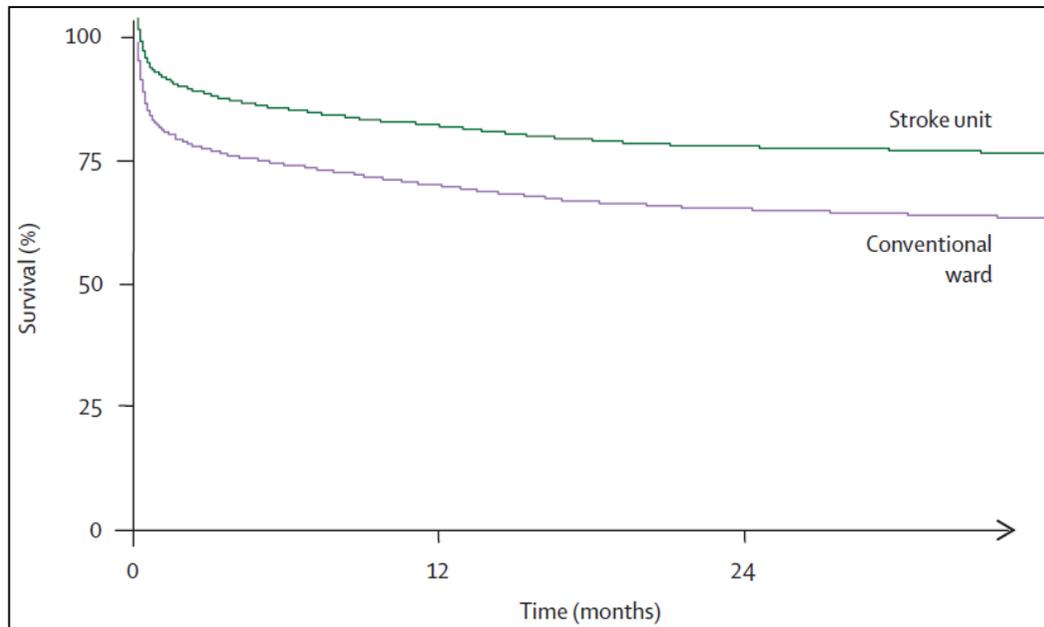
Registre Dijonnais des AVC - période 2000-2012



	Stroke unit (n=4936)	Control (n=6636)	Odds ratio (95% CI)*	p value
In-hospital case fatality	542 (11%)	1034 (15%)	0.78 (0.64-0.95)	0.016
Long-term mortality	1363 (28%)	2382 (36%)	0.79 (0.68-0.91)	0.001
Death or disability	2611 (53%)	4112 (62%)	0.81 (0.72-0.91)	0.0001
Not living at home	1743 (35%)	2829 (3%)	0.85 (0.74-0.97)	0.019

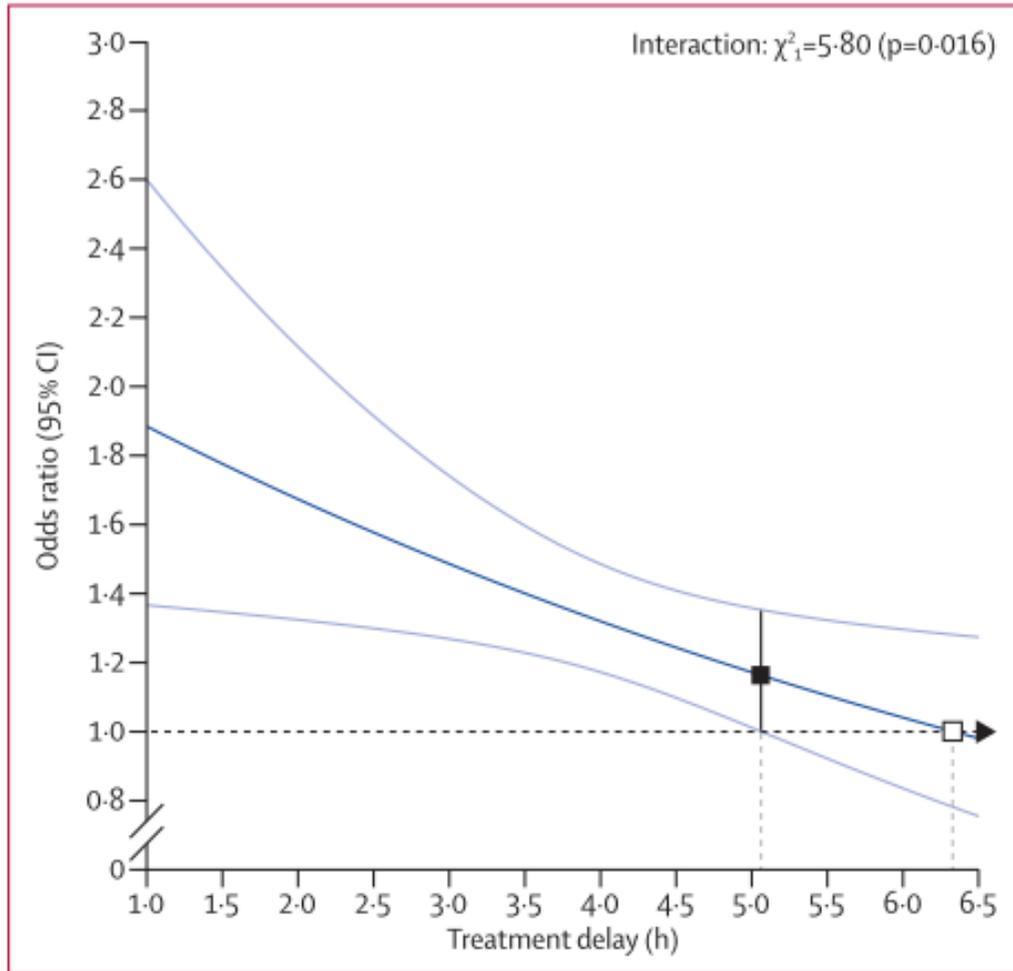
*Adjusted by age, sex, time from stroke onset, intracranial haemorrhages, atrial fibrillation, and unconsciousness, and clustered at the hospital level.

Table 3: Associations between type of service



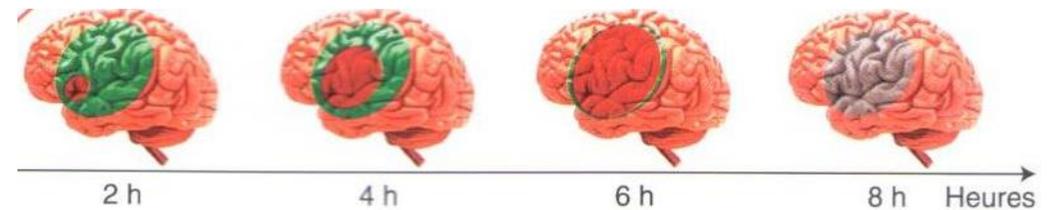
	Stroke unit		Conventional ward		Odds ratio 95% CI
	n	N	n	N	
Overall	2611	4936	4112	6636	0.81 (0.72-0.91)
Age					
Under 75 years	855	2513	1097	2758	0.81 (0.72-0.91)
Over 75 years	1756	2423	3033	3878	0.81 (0.72-0.91)
OR (95%) interaction					1.05 (0.89-1.25)
Sex					
Women	1390	2346	2358	3441	0.81 (0.72-0.91)
Men	1221	2590	1754	3195	0.81 (0.72-0.91)
OR (95%) interaction					0.98 (0.82-1.16)
Time of admission					
Within 6 h	1113	1926	1631	2526	0.81 (0.72-0.91)
After 6 h	1498	3009	2481	4110	0.81 (0.72-0.91)
OR (95%) interaction					0.91 (0.76-1.09)
Intracranial haemorrhage					
Yes	157	412	575	859	1.56 (1.16-2.10)
No	2454	4524	3537	5777	0.81 (0.72-0.91)
OR (95%) interaction					1.56 (1.16-2.10)
Atrial fibrillation					
Yes	562	794	976	1280	0.81 (0.72-0.91)
No	2049	4142	3136	5356	0.81 (0.72-0.91)
OR (95%) interaction					0.98 (0.77-1.24)
Consciousness					
Unconscious	601	675	1191	1303	0.81 (0.72-0.91)
Conscious	2010	4261	2921	5333	0.81 (0.72-0.91)
OR (95%) interaction					0.89 (0.64-1.24)

Thrombolyse intraveineuse

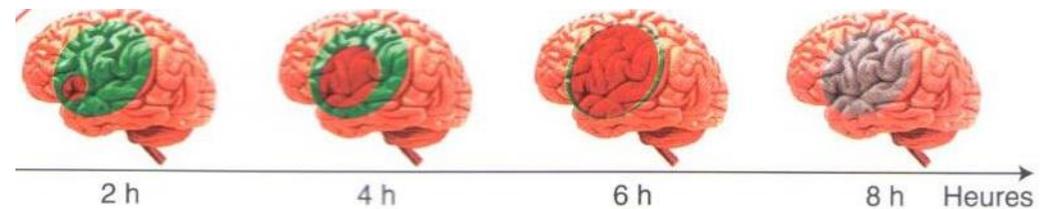
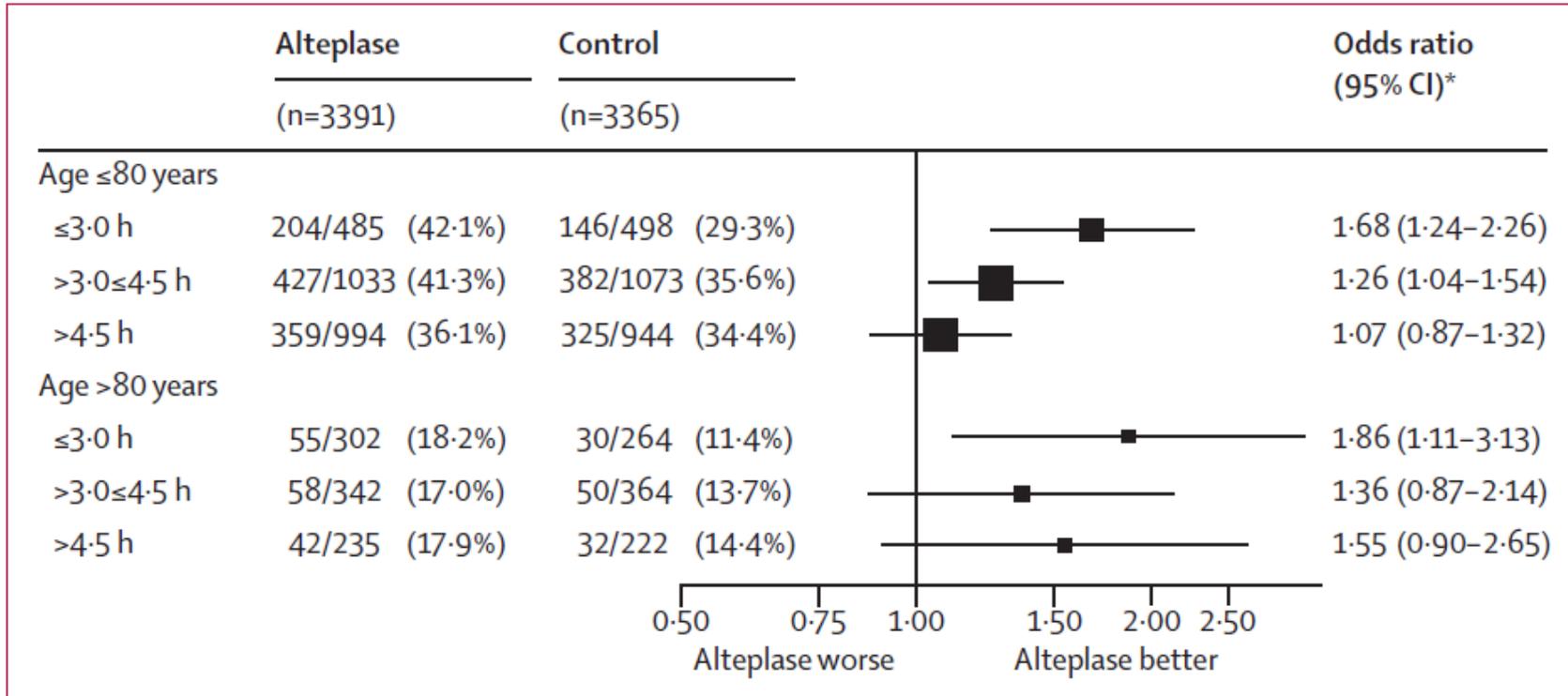


	Alteplase (n=3391)	Control (n=3365)		Odds ratio (95% CI)*
Treatment delay				
≤3.0 h	259/787 (32.9%)	176/762 (23.1%)		1.75 (1.35-2.27)
>3.0≤4.5 h	485/1375 (35.3%)	432/1437 (30.1%)		1.26 (1.05-1.51)
>4.5 h	401/1229 (32.6%)	357/1166 (30.6%)		1.15 (0.95-1.40)
Age (years)				
≤80	990/2512 (39.4%)	853/2515 (33.9%)		1.25 (1.10-1.42)
>80	155/879 (17.6%)	112/850 (13.2%)		1.56 (1.17-2.08)
Baseline NIHSS score				
0-4	237/345 (68.7%)	189/321 (58.9%)		1.48 (1.07-2.06)
5-10	611/1281 (47.7%)	538/1252 (43.0%)		1.22 (1.04-1.44)
11-15	198/794 (24.9%)	175/808 (21.7%)		1.24 (0.98-1.58)
16-21	77/662 (11.6%)	55/671 (8.2%)		1.50 (1.03-2.17)
≥22	22/309 (7.1%)	8/313 (2.6%)		3.25 (1.42-7.47)

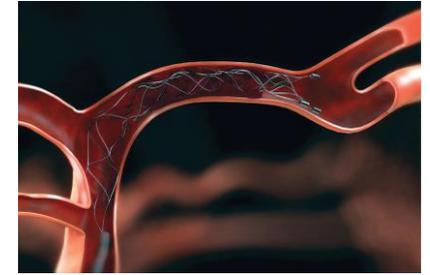
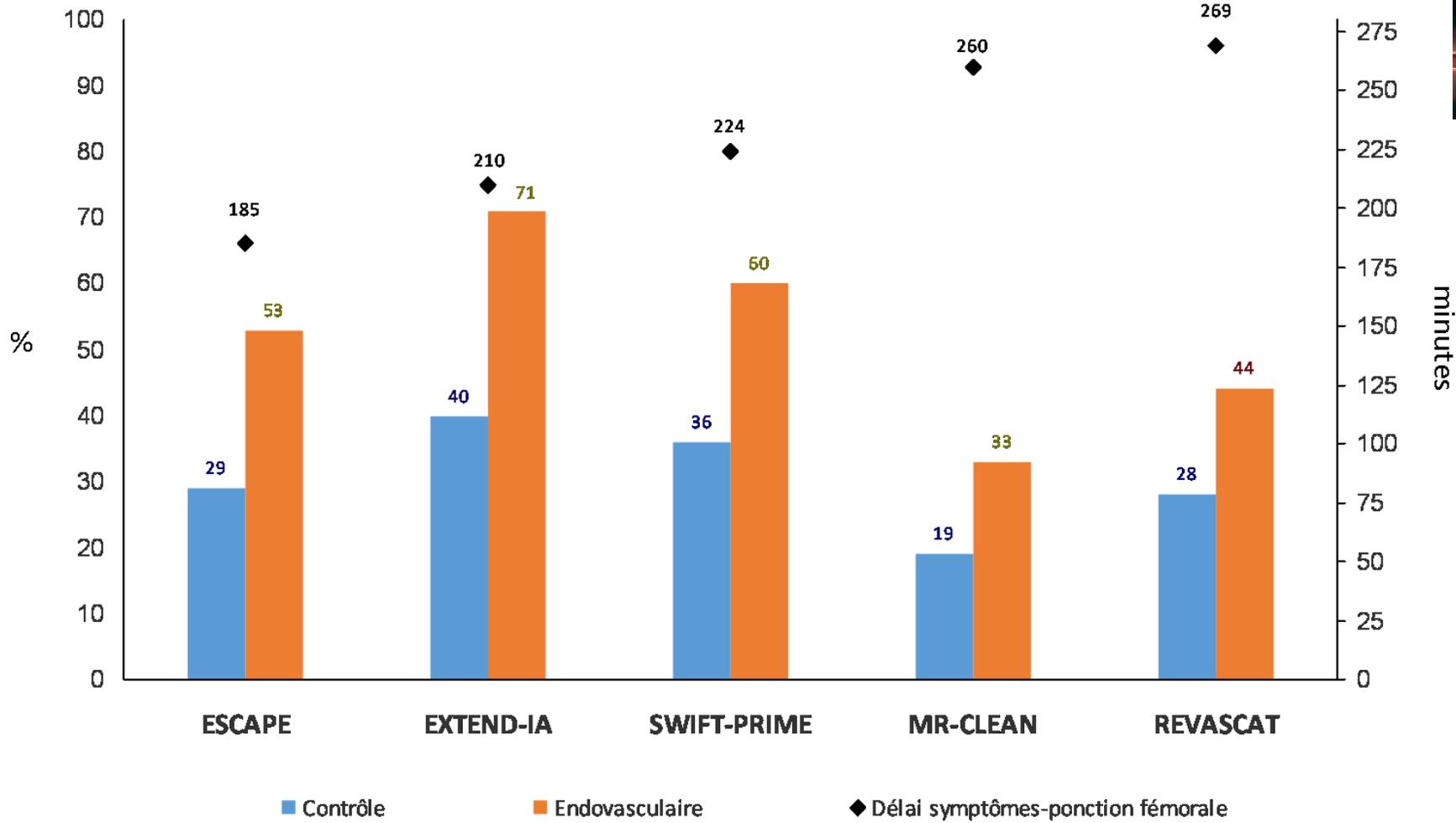
0.5 0.75 1 1.5 2 2.5
Alteplase worse Alteplase better



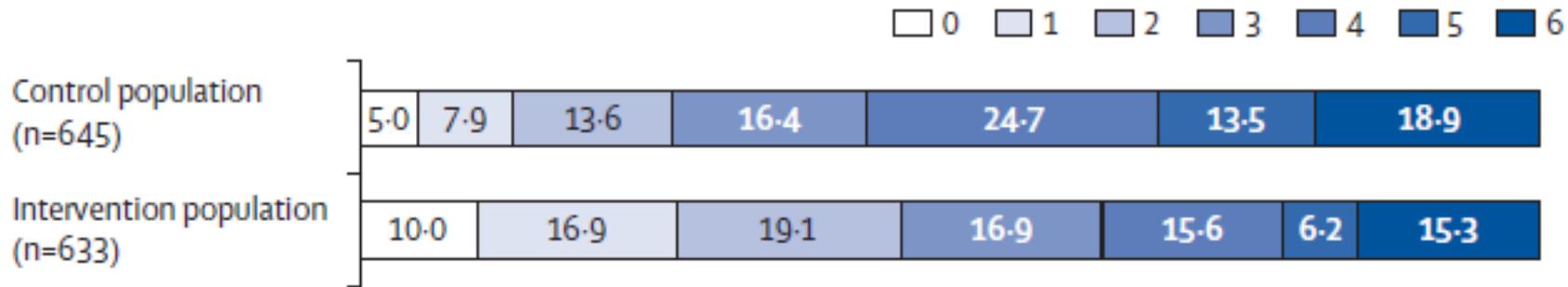
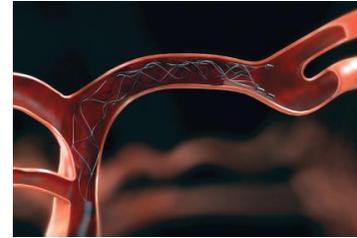
Thrombolyse intraveineuse



Thrombectomie



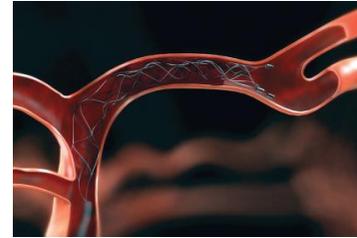
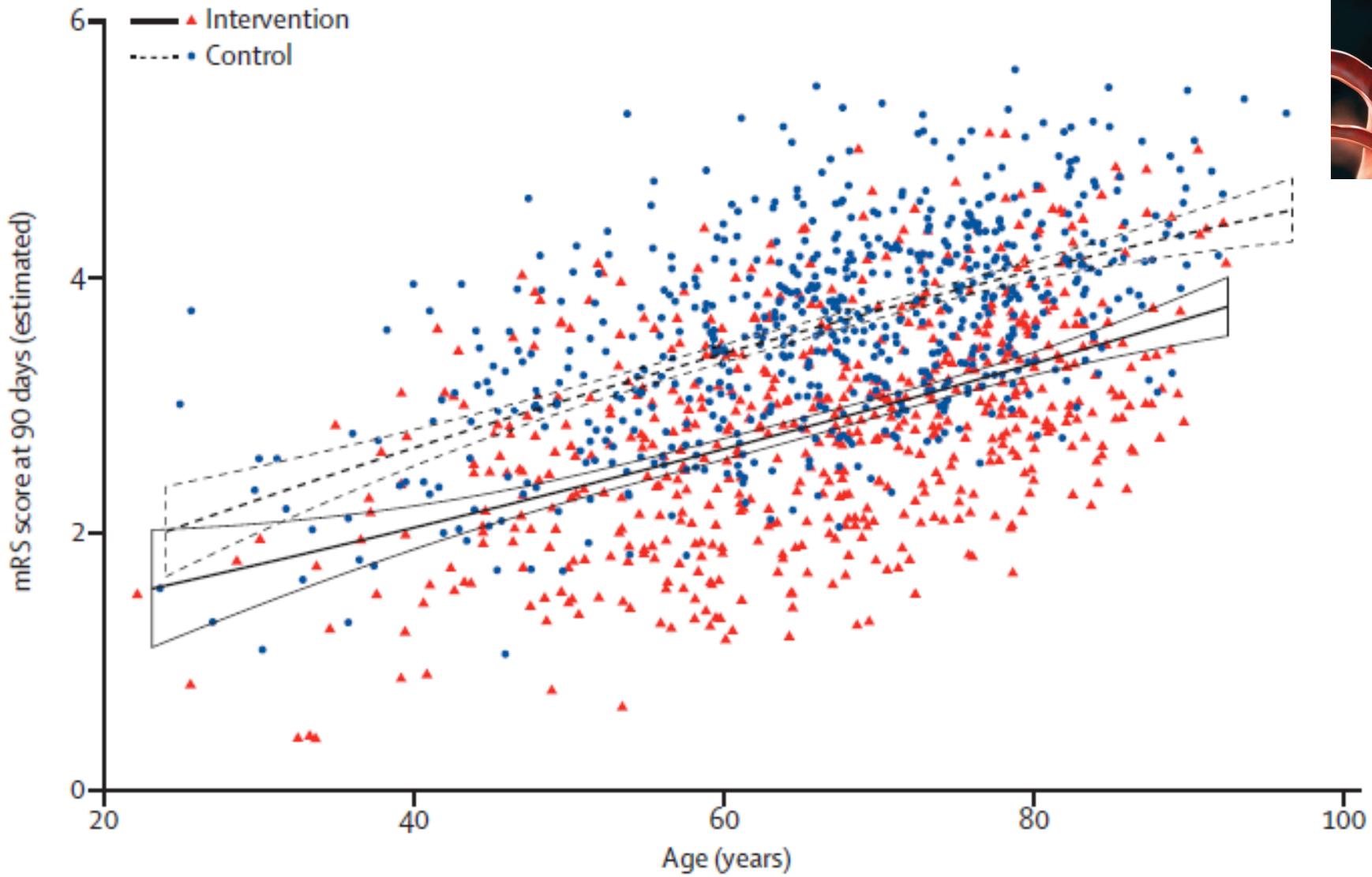
Thrombectomie



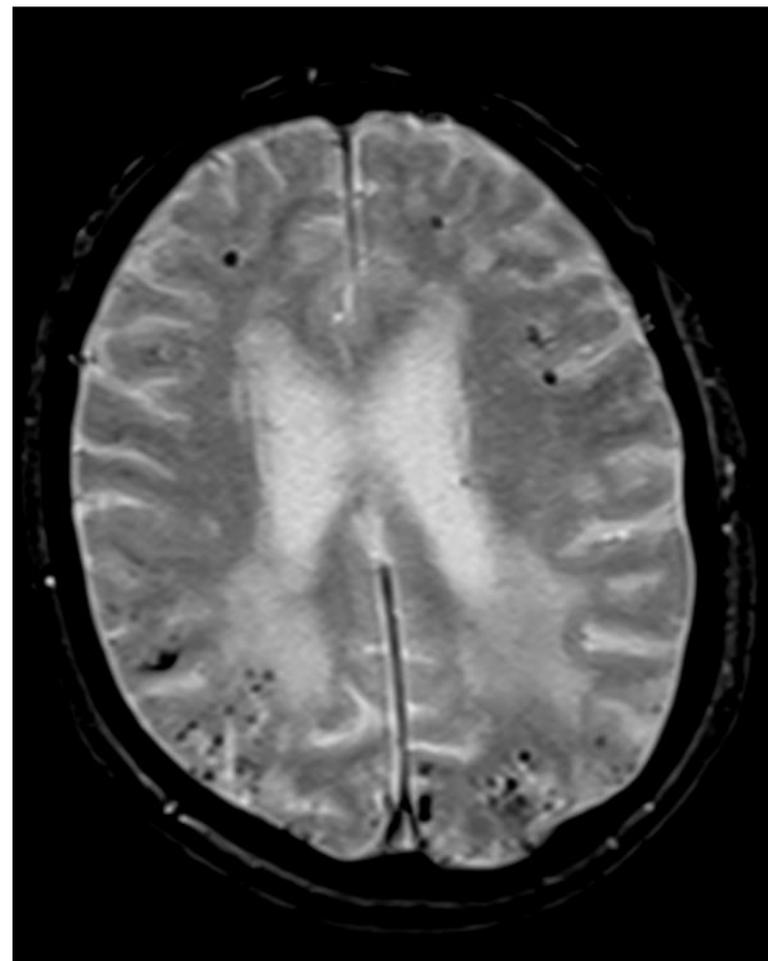
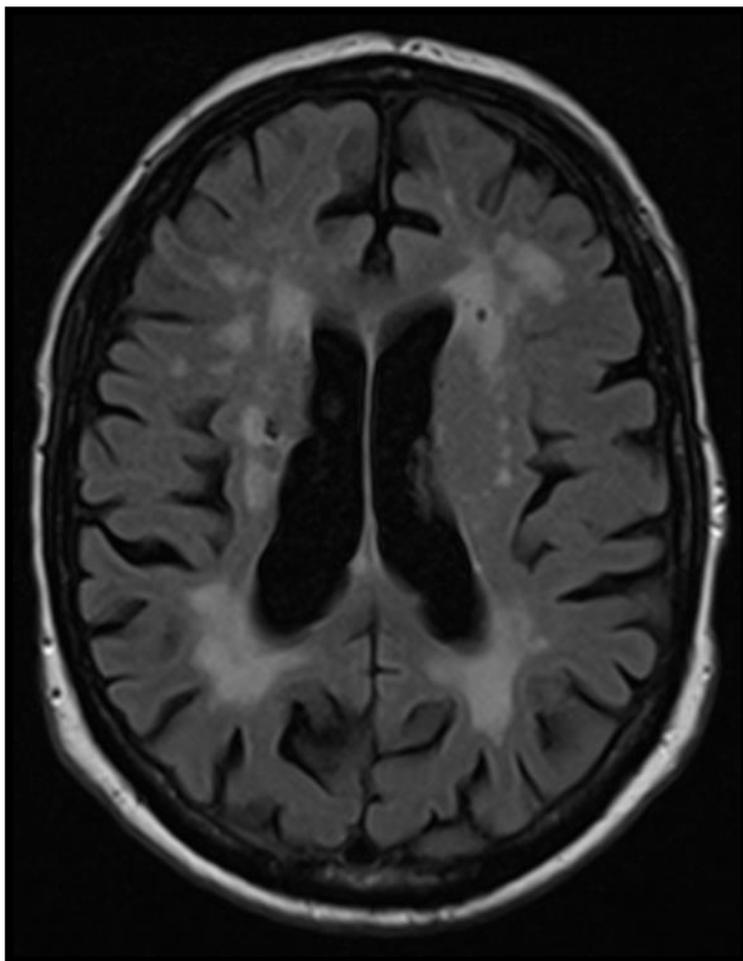
Adjusted OR=2.49 (1.76-3.53)

Age (years)	n	cOR (95% CI)
Age (years) ($p_{\text{interaction}} = 0.07$)		
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)

Thrombectomie



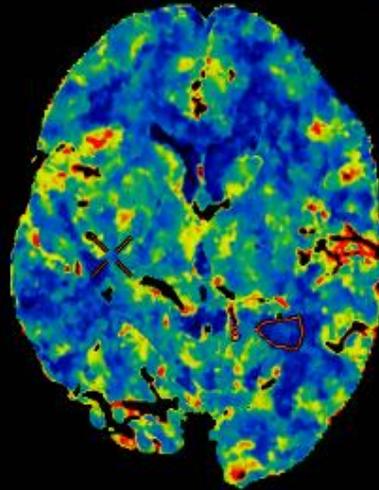
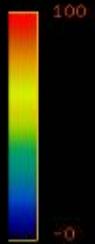
Vers une meilleure sélection des patients ?



Délai tissulaire

Blood flow

Im: 6
DFOV 25,0 cm
No Filter



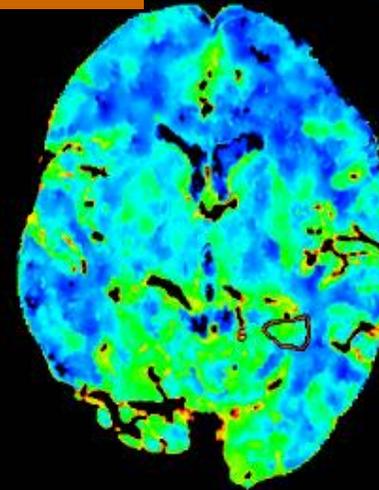
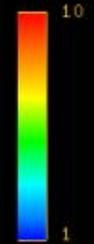
5,0mm /5,0sp

m=-0,0 M=100,0;max=38,80 av=13,55 std=3,927 area=123,3mm2
W=100,0 L=50,0 P 125

Ex:Jul 19 2013

Blood volume

Im: 6
DFOV 25,0 cm



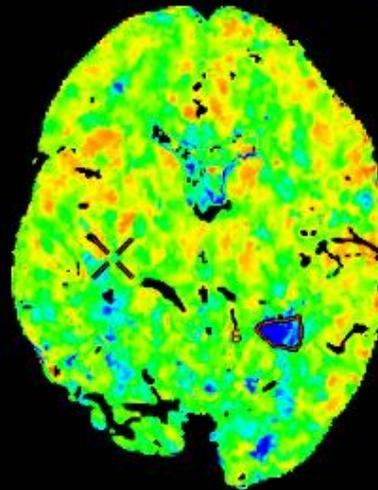
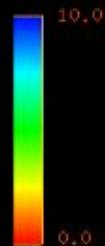
5,0mm /5,0sp

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W=9,5 L=5,5 P 125

Ex:Jul 19 2013

Tmax

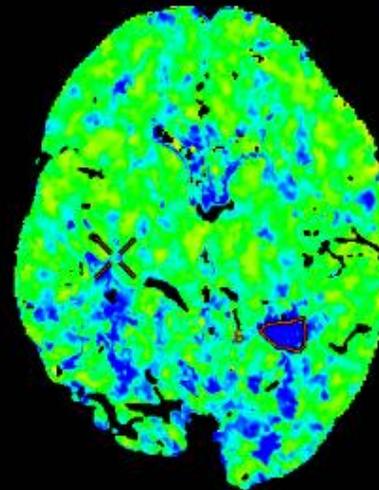
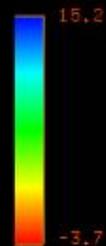
S: 44,8
Im: 6
DFOV 25,0 cm
No Filter



Ex:Jul 19 2013

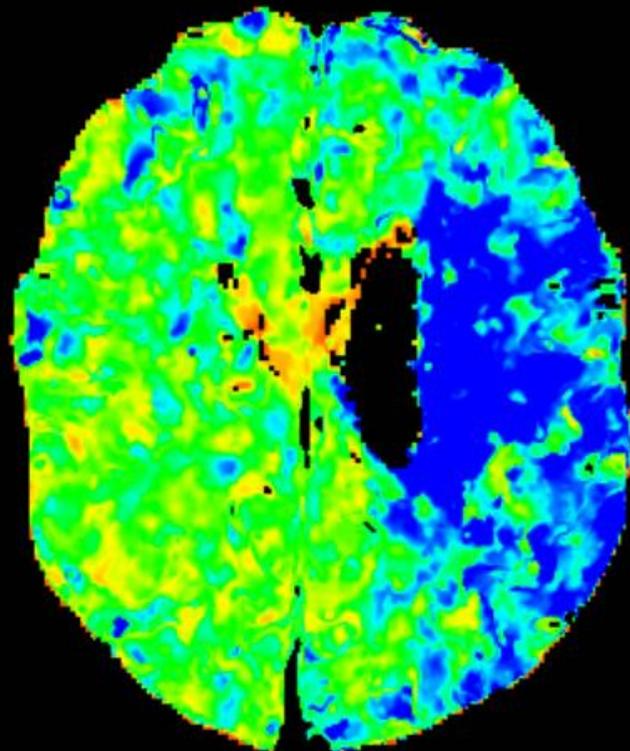
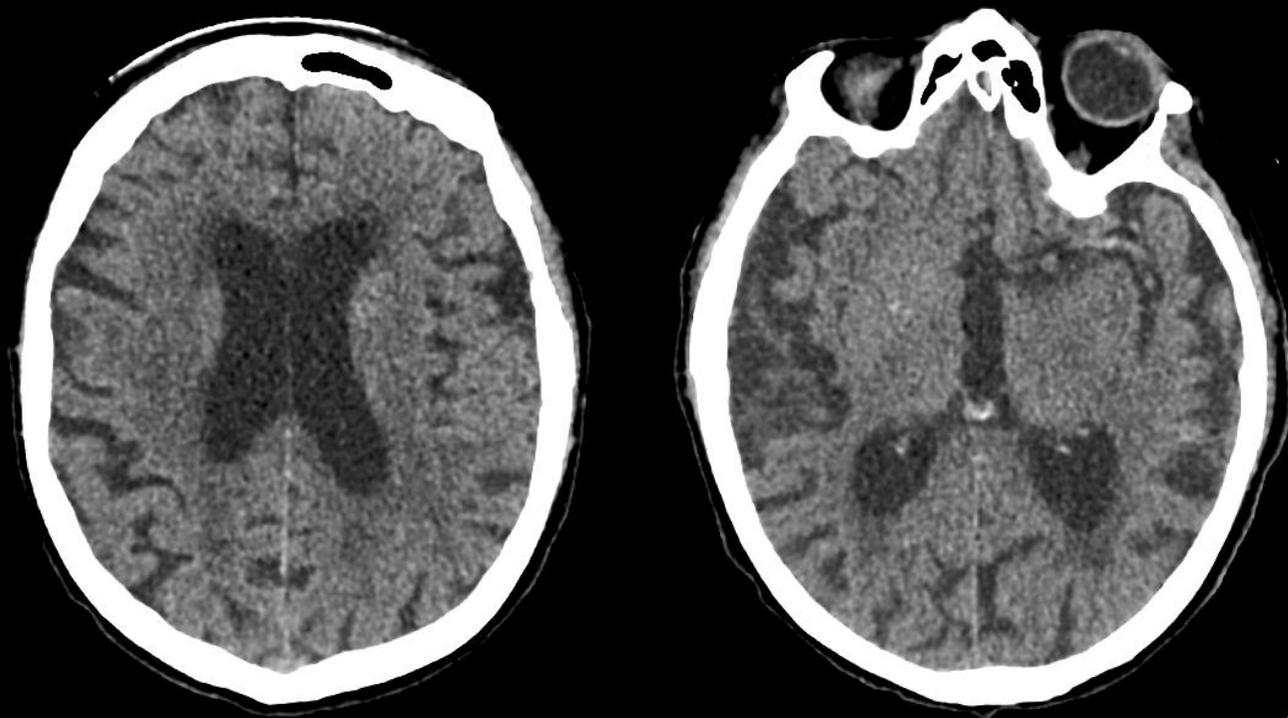
MTT

S: 44,8
Im: 6
DFOV 25,0 cm
No Filter

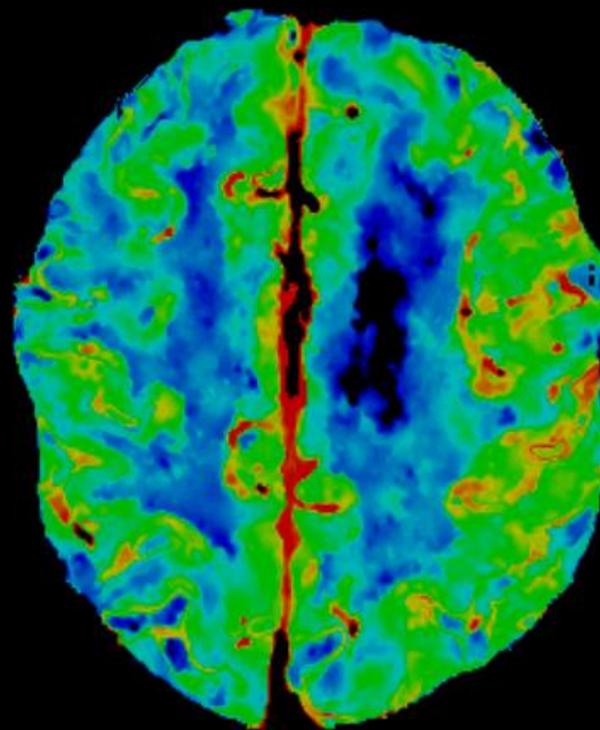


Ex:Jul 19 2013

Exemple 1

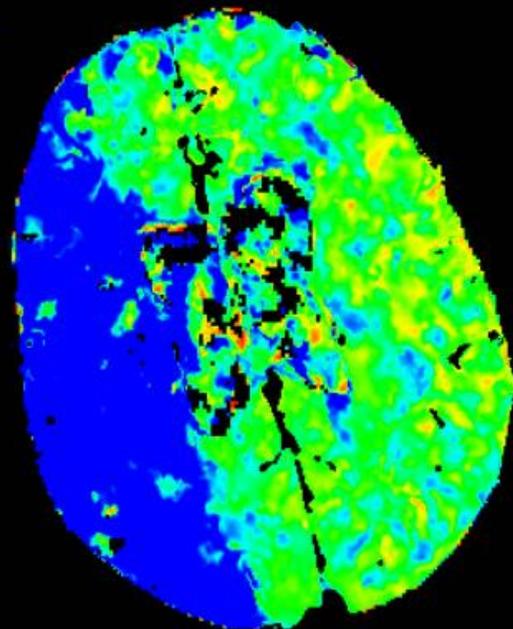


MTT

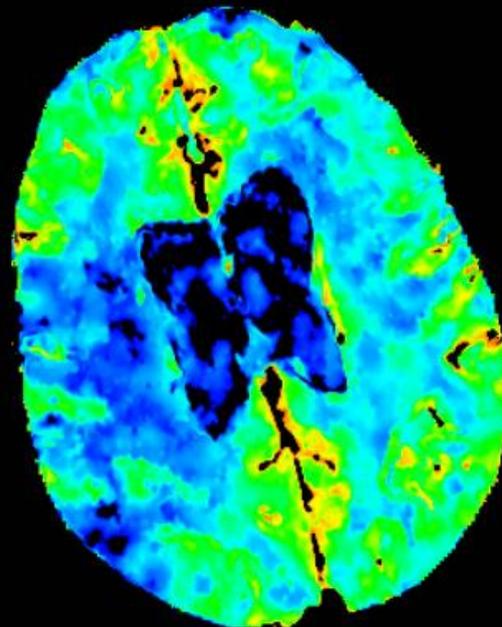


CBV

Exemple 2

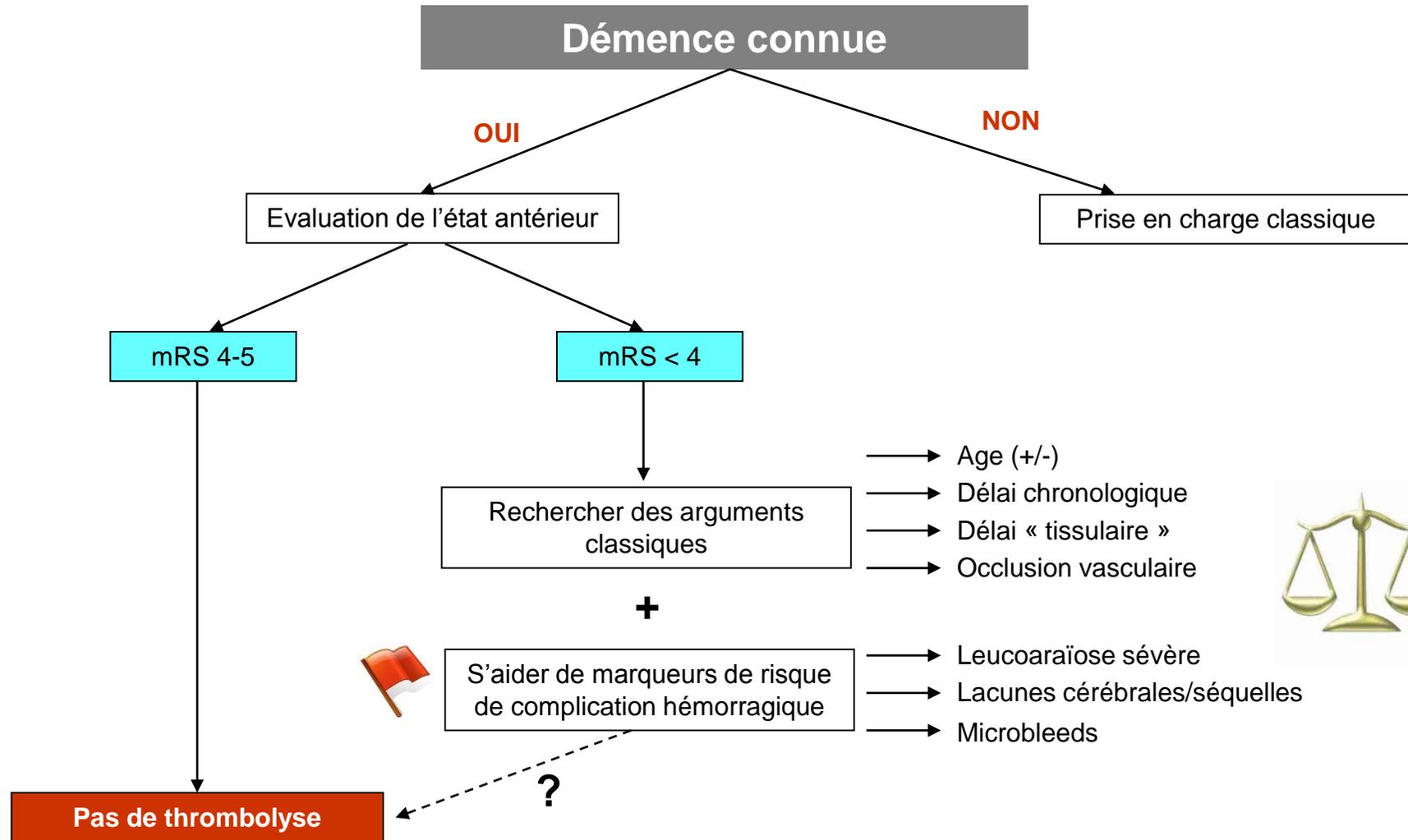


MTT



CBV

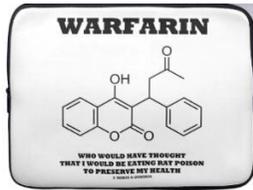
Patient dément



UNE TRIPLE URGENCE

- Urgence épidémiologique
- Urgence de de prise en charge aigue
- **Urgence de prévention**

Prévention secondaire des infarctus cérébraux



ANTITHROMBOTIQUE



CORRECTION DES FACTEURS DE RISQUE

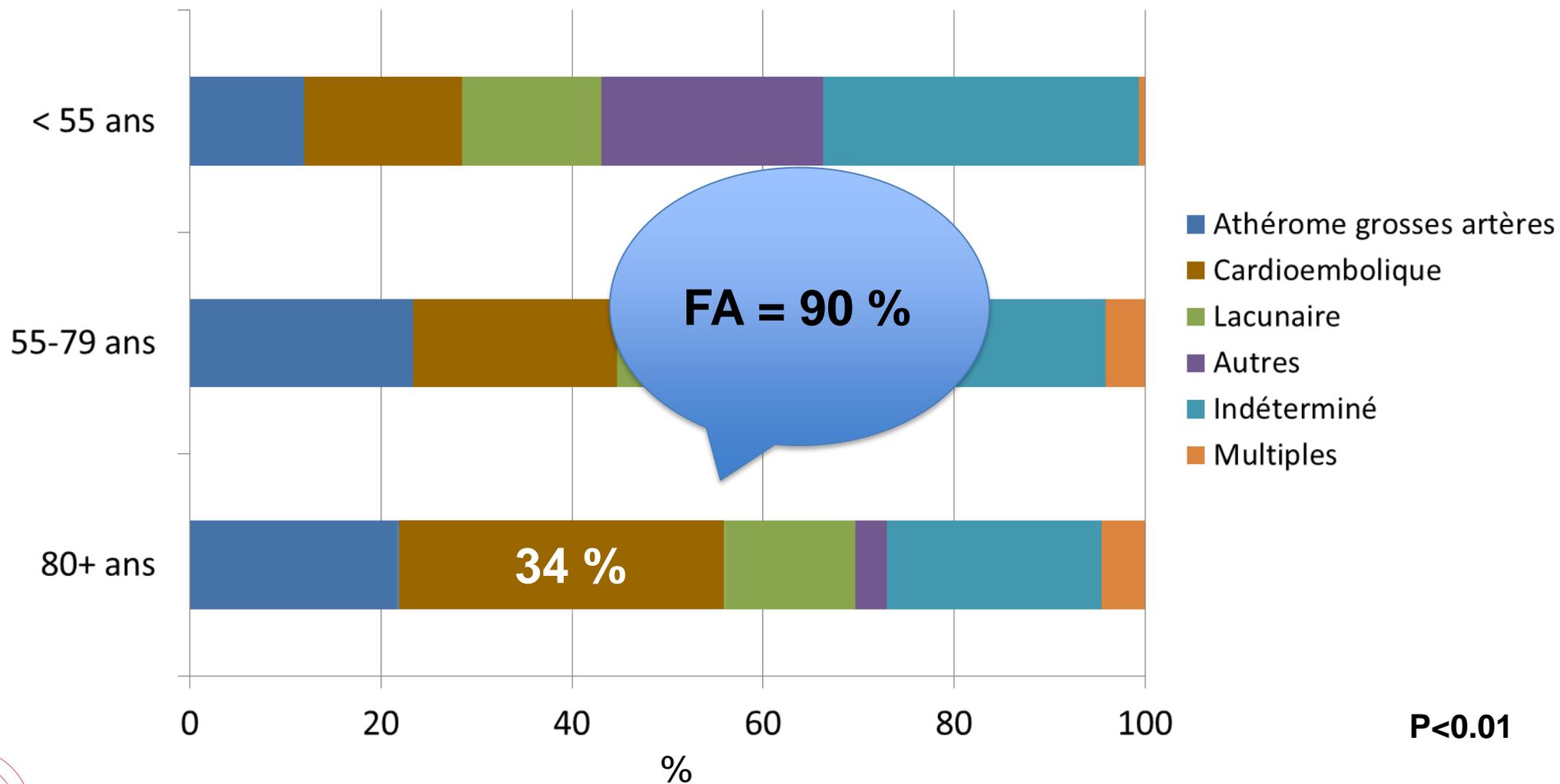
**Prévention
secondaire**

REVASCULARISATION



Distribution des infarctus cérébraux

Registre Dijonnais des AVC - période 2005-2012

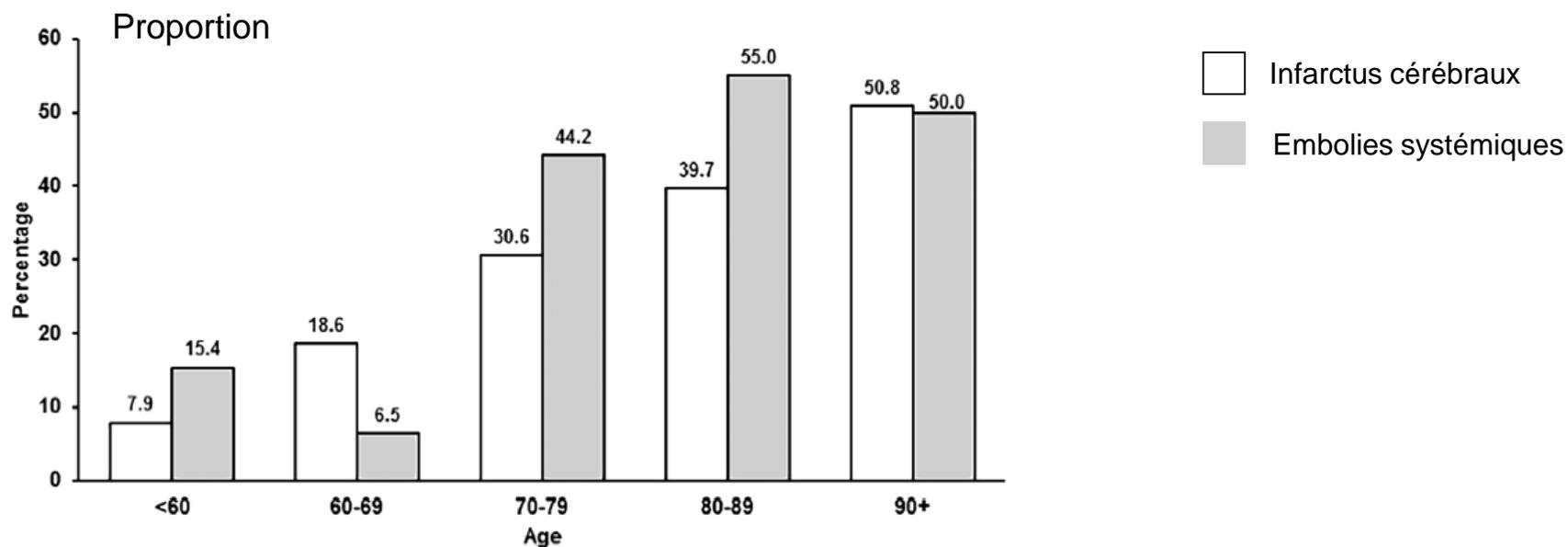


P<0.01

Distribution des infarctus cérébraux

Incidence des infarctus cérébraux et embolies systémiques par FA OXVASC Study

Age (years)	Men	Rate per 1000 per year (95% CI)	Women	Rate per 1000 per year (95% CI)	Total	Rate per 1000 per year (95% CI)
<60	13/38 736	0.03 (0.02 to 0.06)	1/35 656	0.00 (0.00 to 0.02)	14/74 392	0.02 (0.01 to 0.03)
60-69	21/4308	0.49 (0.30 to 0.75)	21/4332	0.48 (0.30 to 0.74)	42/8640	0.49 (0.35 to 0.66)
70-79	65/2848	2.28 (1.76 to 2.91)	61/3187	1.91 (1.46 to 2.46)	126/6035	2.09 (1.74 to 2.49)
80-89	83/1207	6.88 (5.48 to 8.53)	111/1914	5.80 (4.77 to 6.98)	194/3121	6.22 (5.37 to 7.16)
≥90	16/147	10.90 (6.23 to 17.71)	62/393	15.79 (12.11 to 20.24)	78/540	14.46 (11.43 to 18.05)
Total	198/47 246	0.42 (0.36 to 0.48)	256/45 482	0.56 (0.50 to 0.64)	454/92 728	0.49 (0.45 to 0.54)



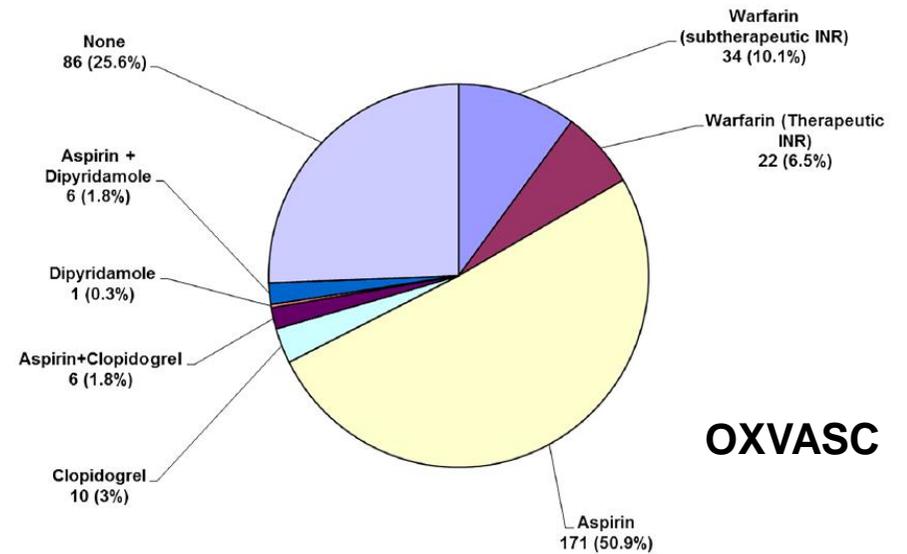
Caractéristiques des patients

RESEARCH PAPER

Recent time trends in incidence, outcome and pre-morbid treatment of atrial fibrillation-related stroke and other embolic vascular events: a population-based study

Gabriel S C Yiin, Dominic P J Howard, Nicola L M Paul, Linxin Li, Ziyah Mehta, Peter M Rothwell, on behalf of the Oxford Vascular Study

Patients aux antécédents de FA

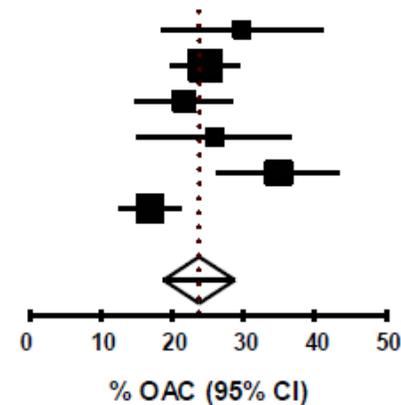


Studies

Studies	OAC Premorbid AF	% OAC	95% CI
2001-5 Barbados	19 / 64	29.7	18.5-40.9
2002-3 Auckland, NZ	71 / 289	24.6	19.6-29.5
2000-6 Dijon, France*	30 / 139	21.6	14.7-28.4
2005-6 North Dublin*	16 / 62	25.8	14.9-36.7
2006-7 Ludwigshafen, Germany*	42 / 121	34.7	26.2-43.2
2002-12 OXVASC, UK*	46 / 274	16.8	12.4-21.2
TOTAL	224 / 949	23.6	18.6-28.6

Heterogeneity

p= 0.004476



Traitements pré-morbides

Patients ayant un antécédent connu de FA

	CHADS ₂ Mean (Median)	CHA ₂ DS ₂ VASc Mean (Median)	HAS-BLED* Mean (Median)	Warfarin [n (%)]	No anti- thrombotics [n (%)]	Mono- antiplatelet [n (%)]	Dual- antiplatelet [n (%)]
Ischaemic stroke							
Age group							
<60 (n=8)	1.38 (1.5)	1.88 (1.5)	0.75 (1)	5 (62.5)	1 (12.5)	2 (25)	0
60-69 (n=27)	1.41 (1)	2.67 (2)	1.33 (1)	7 (25.9)	7 (25.9)	13 (48.1)	0
70-79 (n=75)	2.01 (2)	3.76 (4)	1.77 (2)	20 (26.7)	15 (20)	38 (50.7)	2 (2.7)
80-89 (n=118)	2.64 (2-5)	4.57 (4)	1.47 (1)	14 (11.9)	32 (27.1)	69 (58.5)	3 (2.5)
≥90 (n=46)	2.74 (2-5)	4.80 (5)	1.65 (2)	0	11 (23.9)	33 (71.7)	2 (4.3)
Total	2.32 (2)	4.12 (4)	1.55 (1)	46 (16.8)	66 (24.1)	155 (56.6)	7 (2.6)

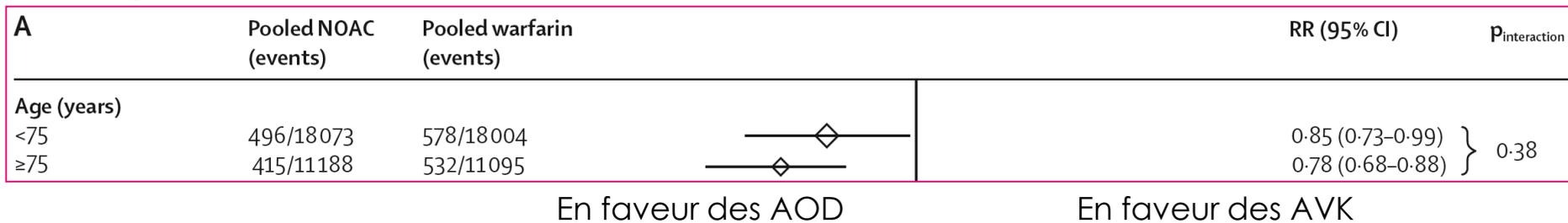
23.5% des patients non-anticoagulés avec CHADS2 ≥ 2 avaient une contre-indication documentée aux anticoagulants

AOD

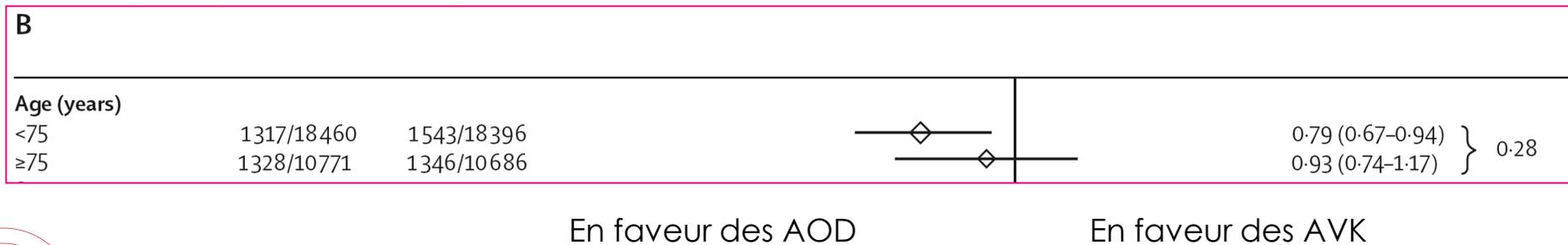
méta-analyse FA : 71 683 participants, dont **29 099 ≥ 75 ans**

- **Pas d'interaction avec l'âge que ce soit en termes d'événements thrombotiques ou hémorragiques**

Sous-groupe AVC, embolies systémiques



Sous-groupe hémorragies majeures



Conclusions

- **L'AVC du sujet âgé : une pathologie émergente !**
- **Urgence de santé publique**
- **Challenges :**
 - Meilleure sélection des patients candidats à un geste aigu
 - Prévention des Infarctus cérébraux par FA
 - Et toujours les autres facteurs de risque dont l'HTA





**REGISTRE
DIJONNAIS**
des
AVC