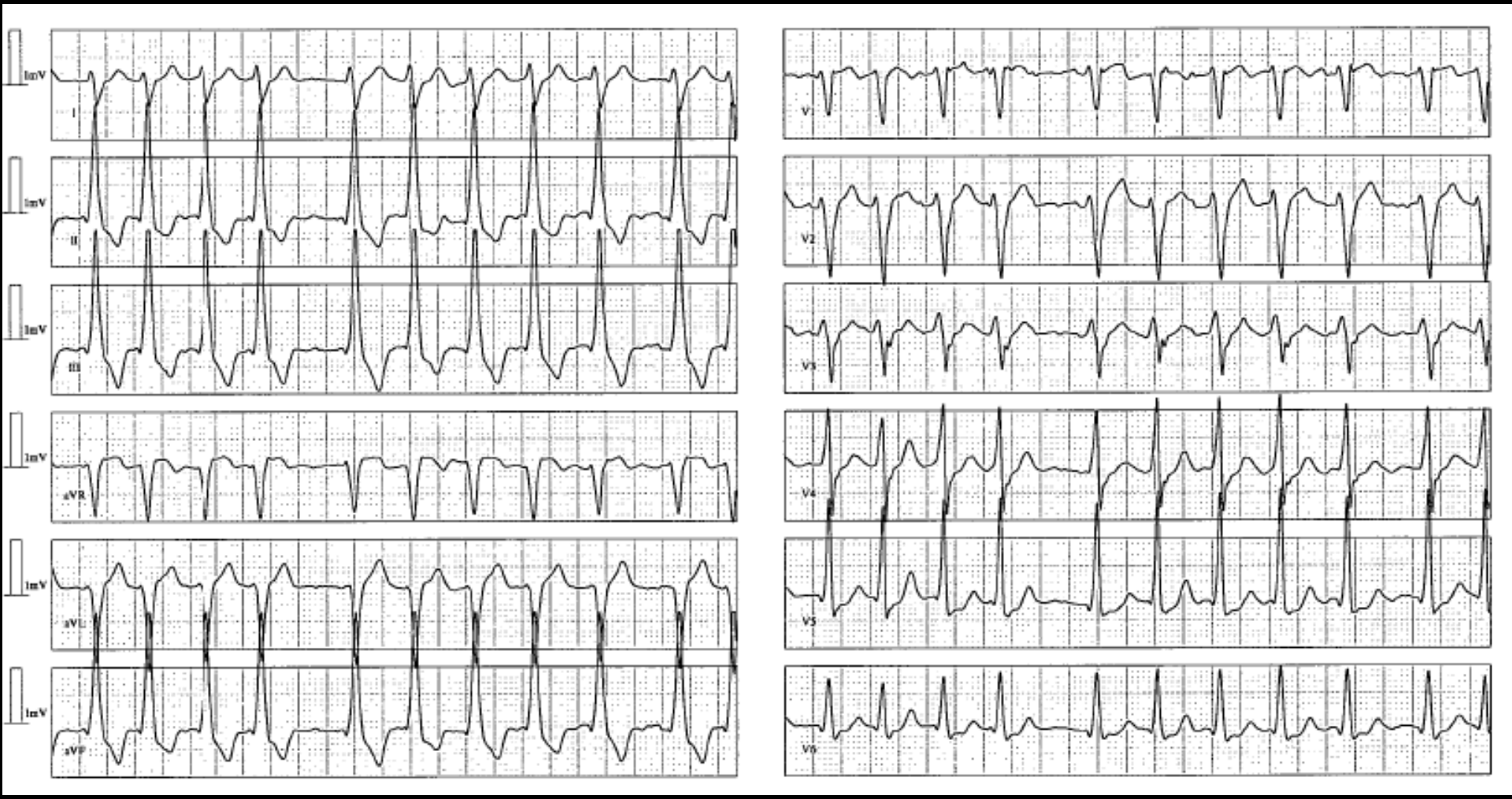
G Boriani
B Sassone
P Cerrato
M Bo

Istituto di Cardiologia
Università di Bologna

Caso clinico

- Uomo, 74 aa, iperteso, diabete (in tp dietetica)
- *All'ipermercato pre-sincope → 118: BAV totale con bassa FC → atropina e.v. → PS*

M 17 24



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Caso clinico

- Uomo, 74 aa, iperteso, diabete (in tp dietetica)
- *All'ipermercato pre-sincope → 118: BAV totale con bassa FC → atropina e.v. → PS*
- E' in tp con ACE-I, Amlodipina, Clopidogrel

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Caso clinico

-74 aa … tp con ACE-I, Amlodipina, Simvast, Clopidogrel … ma perchè…

-A 58 aa Ip art

-A 68 anni disartria a rapida risoluzione → al PS PA 170/100 ; TC neg; ECG con bradi sinus e BBD; Doppler carot, Test coag, Eco e Holter neg. No PFO. Dgn: TIA emisferico dx. Tp ASA, ACE-I , amlodipina.

- In seguito dgn diabete controllato da dieta

-Un mese prima di questo ricovero (a 74 aa) afasia per 10 min → al PS PA 140780, TC neg, ECG con BAV I gr e rit aspec con dev A dx. TC a 7 gg modesta ipodensità reg cerebr med sn di dubbio significato. Doppler e test coag nn. Dgn TIA emisferico sn.

Dopo mezz'ora circa

Si programma impianto PM DDD eseguito nella stessa giornata

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Caso clinico

Domanda

Pz con FA transitoria dopo atropina e storia TIA. Eseguito impianto PM … come gestire il caso ?

1 ♥ Prosegue clopidogrel

2 ♥ ASA + clopidogrel

3 ♥ Anticoagulante sospendendo Clopidogrel

4 ♥ Anticoagulante e clopidogrel

5 ♥ Holter fra 1 mese e periodicamente per valutare se FA “spontanea” e “silente”

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Caso clinico

Domanda

Come stratifichiamo il rischio tromboembolico ?

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Caso clinico

Domanda

$CHADS_2 = 4$

$CHA_2DS_2VASc = 5$

Stroke Risk Stratification in AF

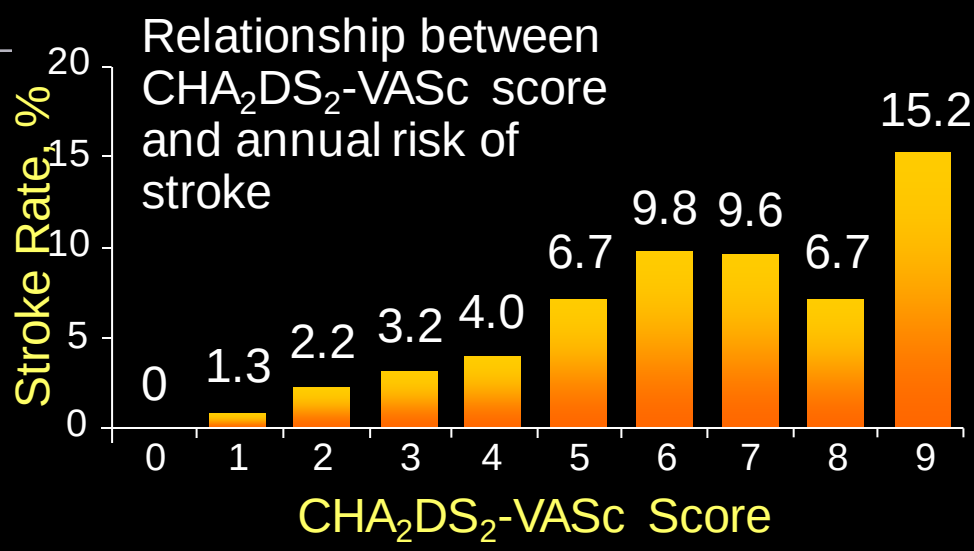
$CHADS_2$

Risk Factor	Score
Cardiac failure	1
HTN	1
Age ≥75 y	1
Diabetes	1
Stroke	2

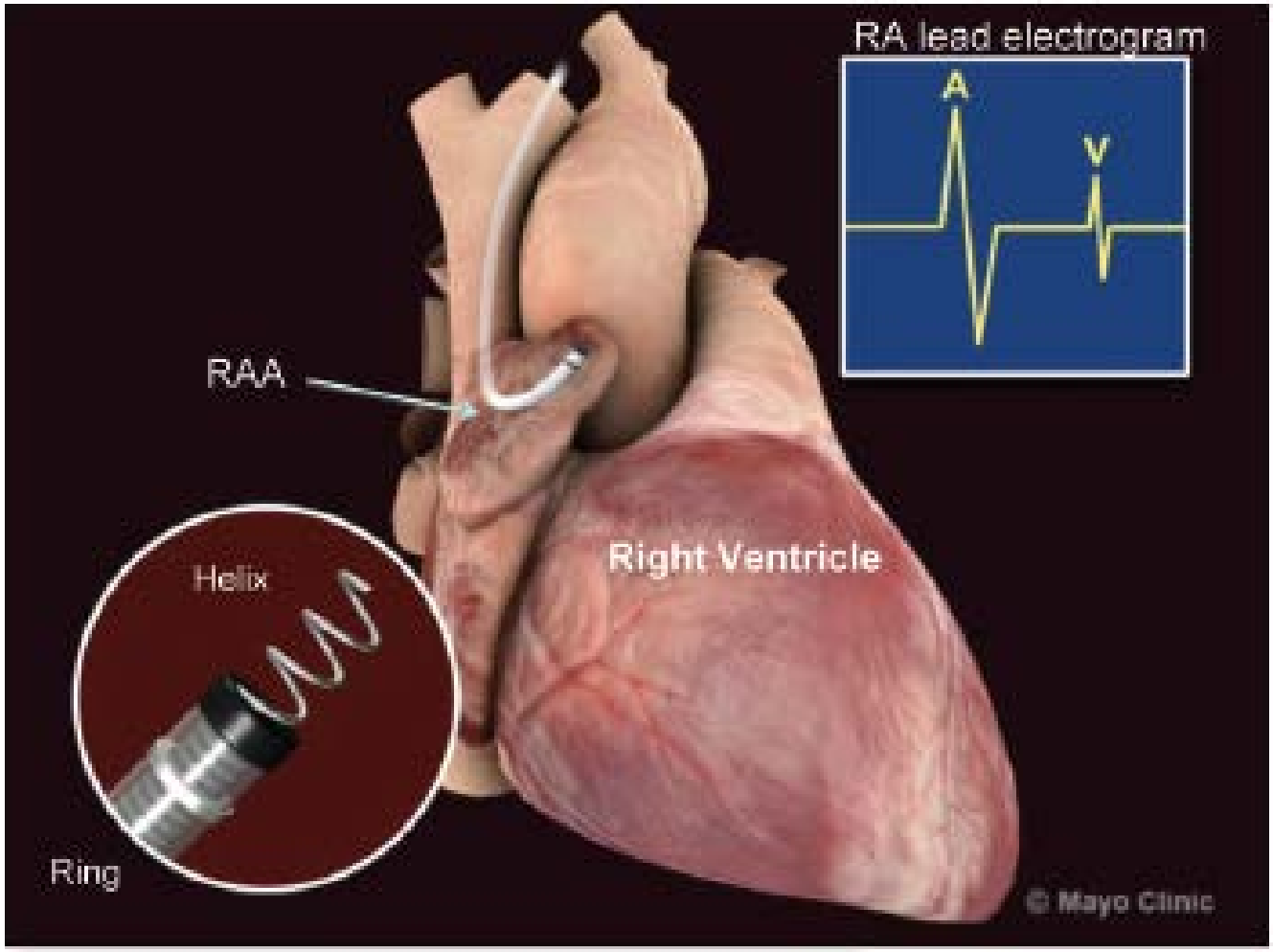
Total Score (%)	Annual Risk of Stroke
0	1.9
1	2.8
2	4.0
3	5.9
4	8.5
5	12.5
6	18.2

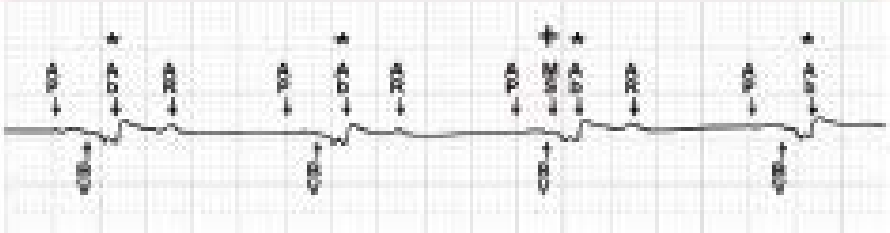
CHA_2DS_2-VASc

Risk Factor	Score
Cardiac failure	1
HTN	1
Age ≥75 y	2
Diabetes	1
Stroke	2
Vasc dz (MI, PAD, aortic ath)	1
Age 65-74 y	1
Sex **c**ategory (female)	1

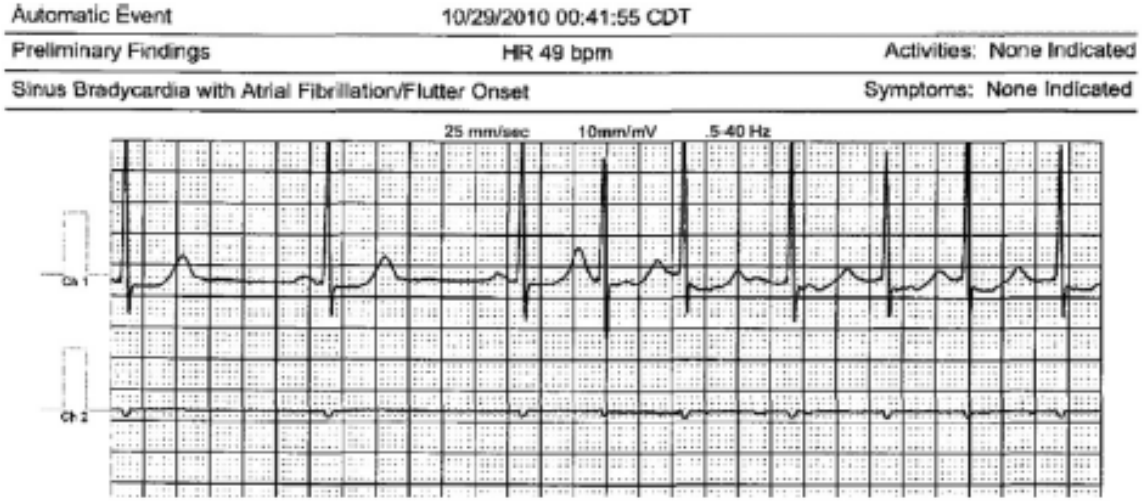


Lip GY, Halperin JL. *Am J Med*. 2010;123(6):484-488.

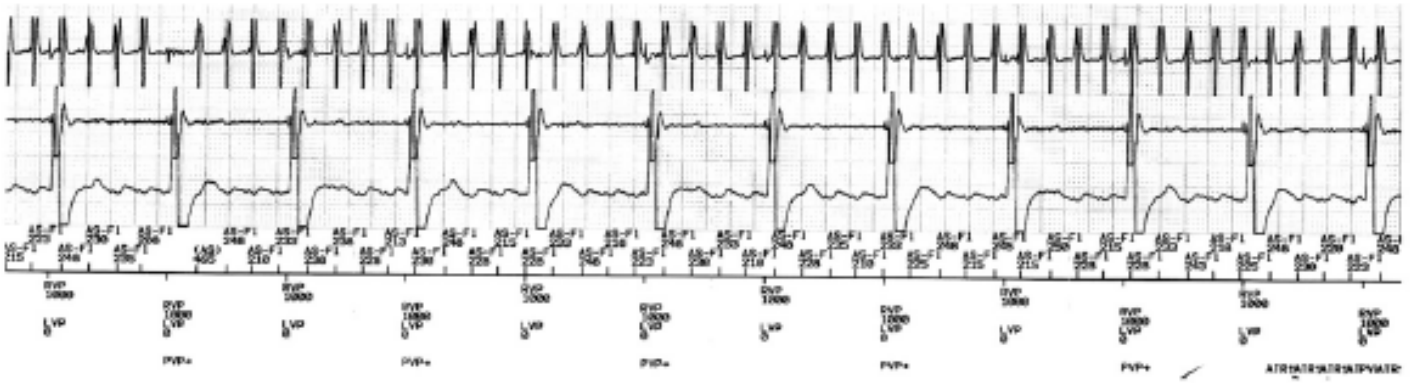

RA lead electrogram
A
V
RAA
Helix
Ring
Right Ventricle
© Mayo Clinic



A

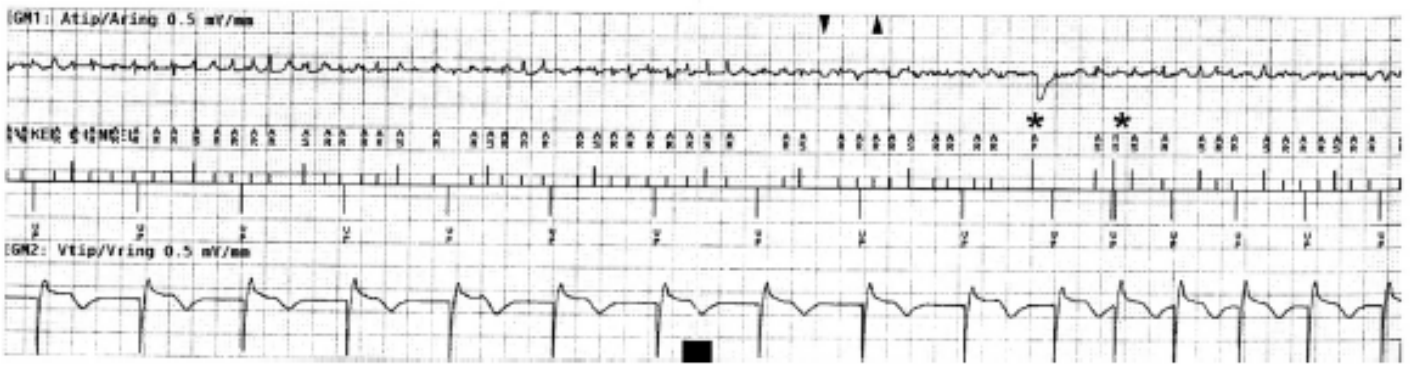


B



Atrial rate: 270 bpm

C



Atrial rate: 350 bpm

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Episodi alta frequenza

Periodo di raccolta dei dati: 30.11.10 10:56 - 30.11.11 9:52 (Ultimi 12 mesi)

Episodi alta frequenza atriale

Trigger episodi	Cambio modo
Ritardo nella raccolta	30 sec
Freq. di riconosc.	175 min-¹
Durata riconoscimento	Senza ritardo

Episodi alta frequenza ventricolare

Freq. di riconosc.	180 min-¹
Battiti per il riconoscimento	5 battiti
Battiti per la terminazione	5 battiti

Dati degli episodi

Episodi AFV	2
Cambi modo	159 (0.9 ore/giorno - 3.8%)
Episodi AFA	89
PVC singole	38,807
Serie PVC	1,889
Serie di PAC	929,217

Tipo	Data/Ora	Durata hh:mm:ss	Frequenze (min-¹): A. max	V. max	V. medio	Sensore
AFA	30.11.10 23:56	:03:20	317	163	121	50
AFA	01.12.10 17:16	52:32:20	>400	183	95	104
AFA	10.10.11 11:44	:05:12	>400	77	51	50
AFA	10.10.11 15:37	:19:50	>400	107	50	50

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Episodi alta frequenza

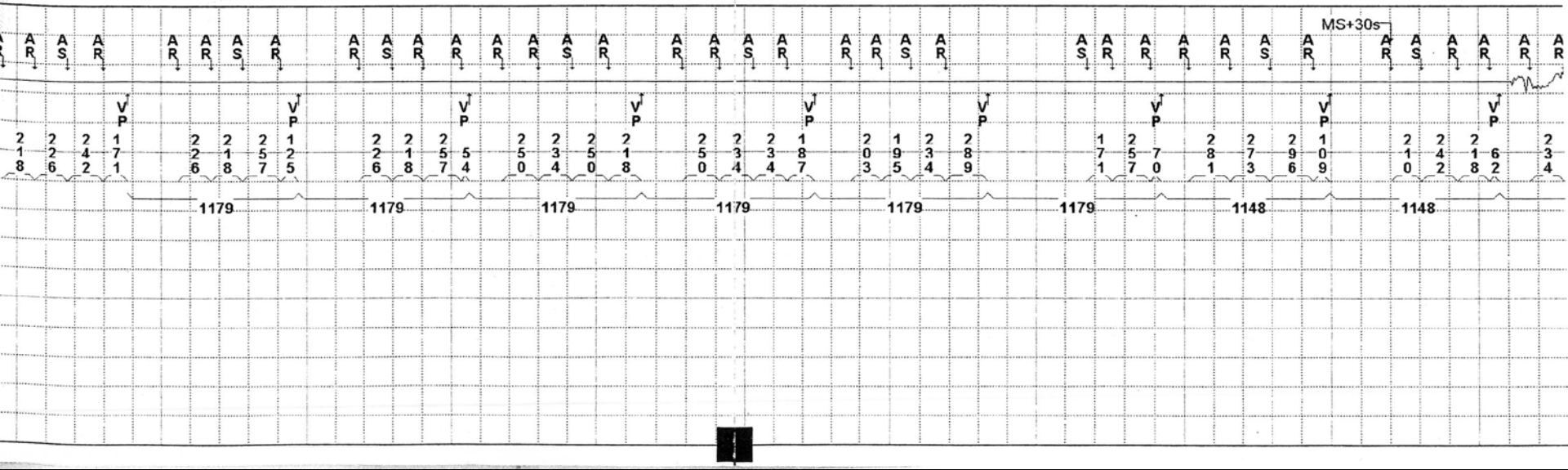
Tipo	Data/Ora	Durata hh:mm:ss	Frequenze (min-¹): A. max	V. max	V. medio	Sensore
AFA	10.10.11 15:57	:57:38	>400	101	56	50
AFA	10.10.11 16:55	:59:02	>400	107	61	104
AFA	19.10.11 0:46	:34	293	115	106	111
AFA	19.10.11 0:49	:38	362	105	103	100
AFA	19.10.11 0:49	7:15:22	>400	110	53	93
AFA	19.10.11 8:12	3:02:40	>400	104	60	98
AFA	23.10.11 23:30	:35	305	74	55	50
AFA	24.10.11 21:05	:02:25	305	85	53	53
AFA	18.11.11 9:48	5:27:36	>400	96	64	54
AFA	28.11.11 1:03	:09:08	400	76	51	51
AFA	28.11.11 1:13	8:42:21	>400	97	53	51

ker: Medtronic Sensia L SEDRL1
NWJ614529

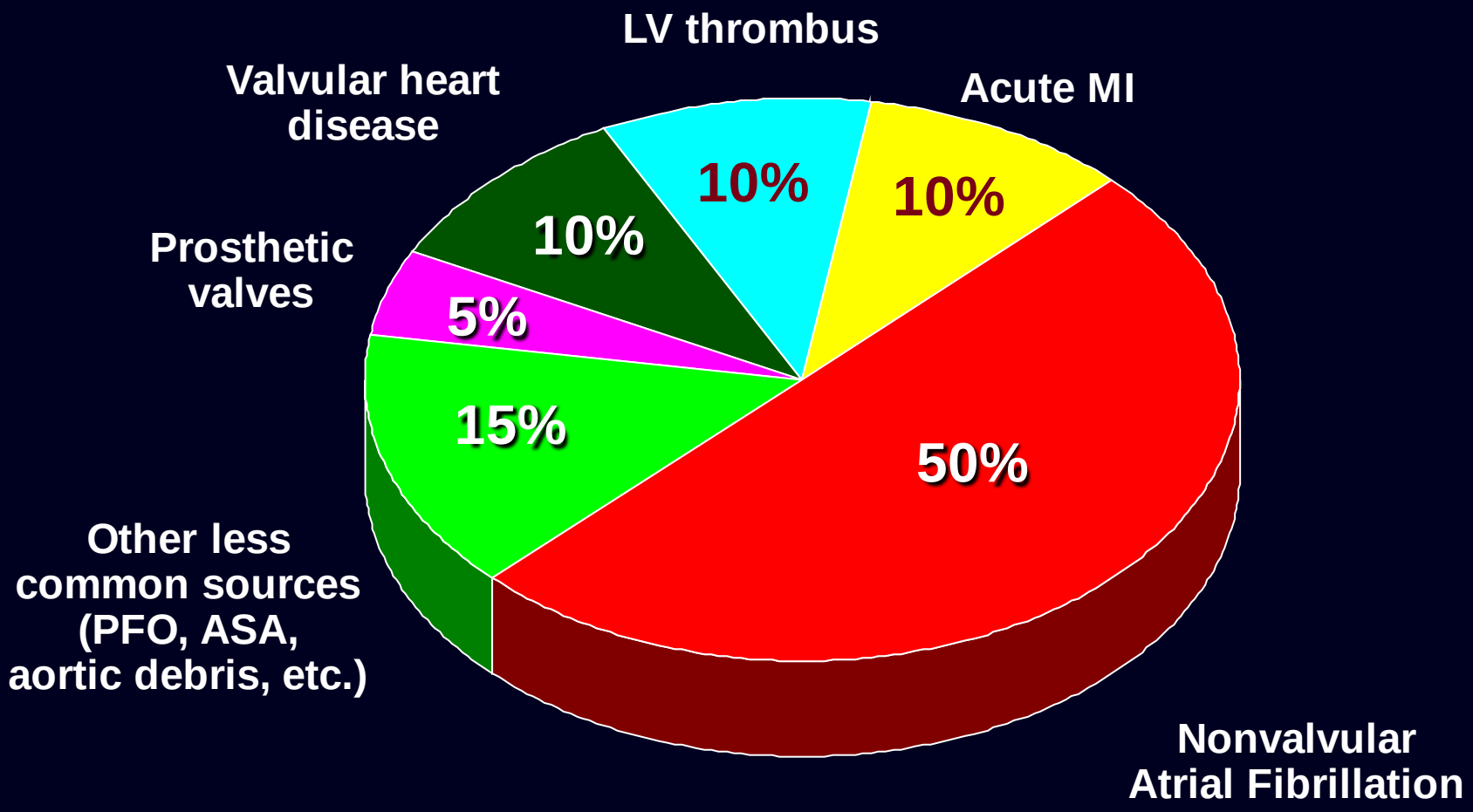
onversato

1 9:48

25.0 mm/sec



Sources of Cardioembolism



Cerebral Embolism Task Force, Arch. Neurol 1986; 43: 71-84

Cerebrovascular Diseases

Cerebrovasc Dis 2011;32:276-282

Paroxysmal Atrial Fibrillation Is More Prevalent than Persistent Atrial Fibrillation in Acute Stroke and Transient Ischemic Attack Patients

T. Rizos, A. Wagner, E. Jenetzky, P.A. et al

692 patients with ischemic Stroke (in 69%) or TIA (in 31%)

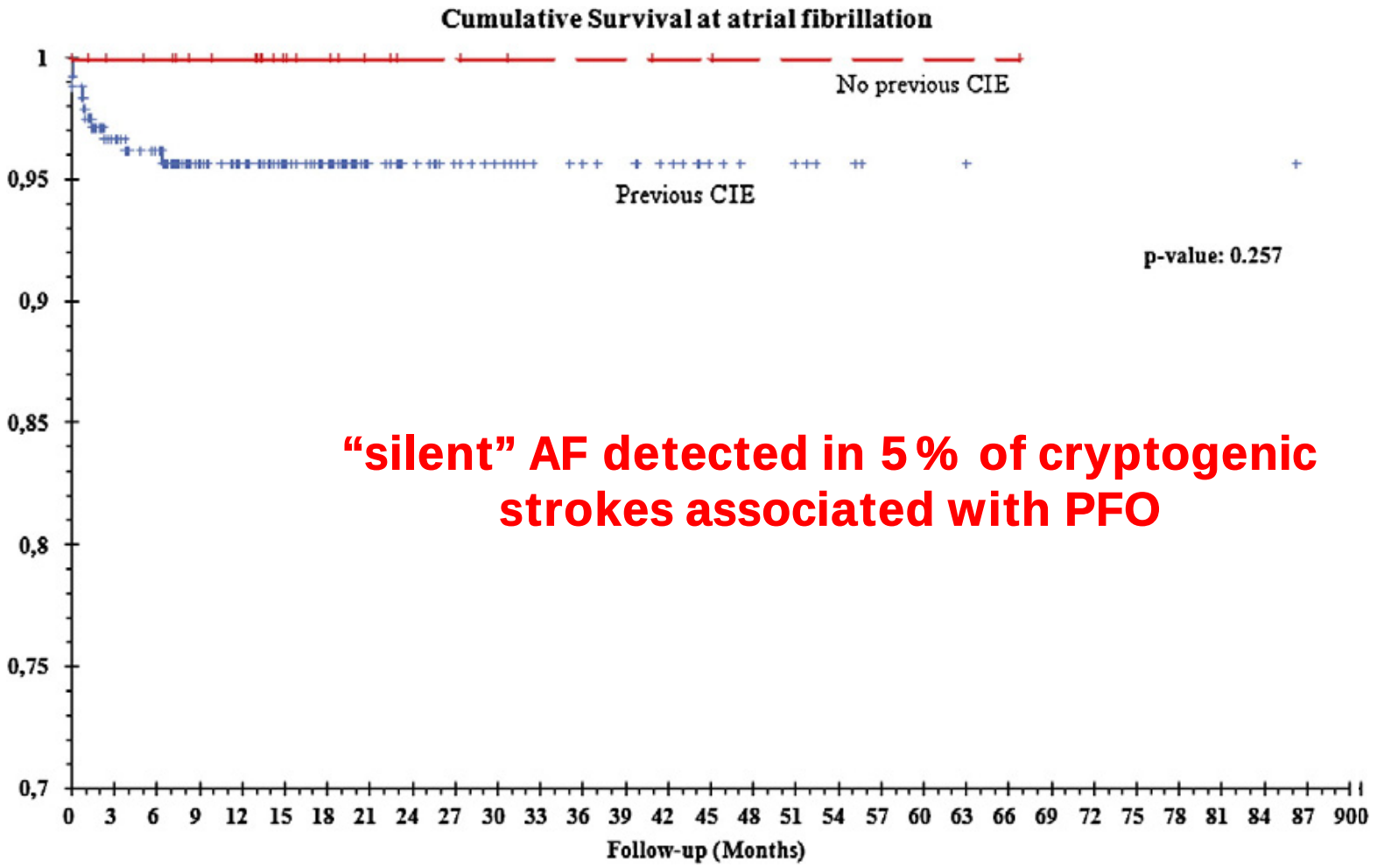
- History of AF in 19.7% (parox AF: 47.1%, pers-permanent AF: 52.9%)
- New AF diagnosed in Emerg Dept in 3.8% (parox AF: 61.5%)
- New AF diagnosed with monitoring during a 3-month follow up in 5.2% (parox AF: 62.6%)ù

→Paroxysmal AF occurs more often than persistent-permanent AF in stroke/TIA patients.
→As effective stroke prevention is available for AF, it is important to develop and evaluate sensitive methods for detecting parox AF

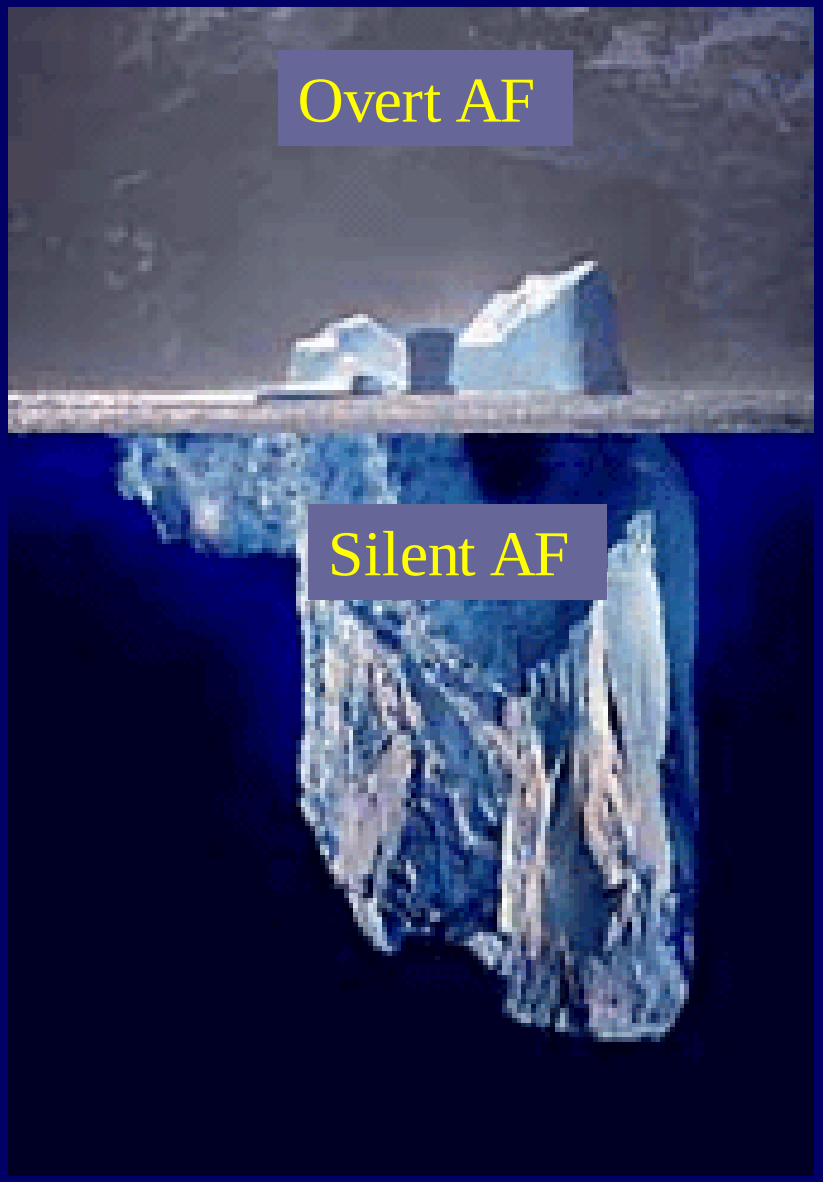
Role of atrial fibrillation after transcatheter closure of patent foramen ovale in patients with or without cryptogenic stroke

Gabriele Bronzetti [a], Cinzia D'Angelo [a,*], Andrea Donti [a], Luisa Salomone [a], Alessandro Giardini [a], Fernando Maria Picchio [a], Giuseppe Boriani [b]

International Journal of Cardiology 146 (2011) 17–21



"silent" AF detected in 5% of cryptogenic strokes associated with PFO



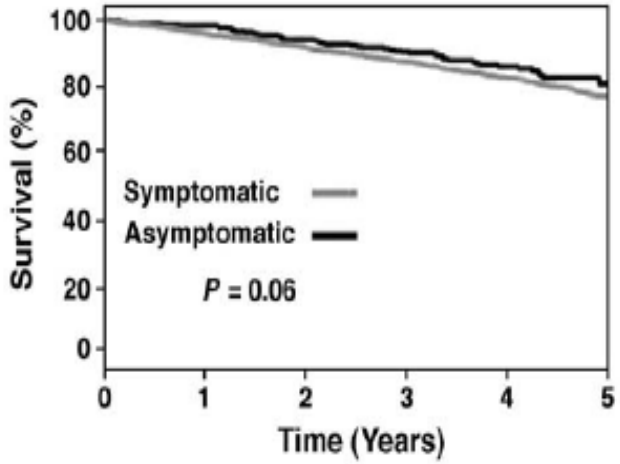
silent AF can be a silent killer !

Asymptomatic atrial fibrillation: Demographic features and prognostic information from the Atrial Fibrillation Follow-up Investigation of Rhythm Management (AFFIRM) study

(Am Heart J 2005;149:657-63.)

Greg C. Flaker, MD, FACC,[a] Kathy Belew, RN,[a] Karen Beckman, MD, FACC,[b] Humberto Vidaillet, MD, FACC,[c] Jack Kron, MD, FACC,[d] Robert Safford, MD,[e] Mary Mickel, MS,[f] Patrick Barrell, BS,[f] and the AFFIRM Investigators[1]

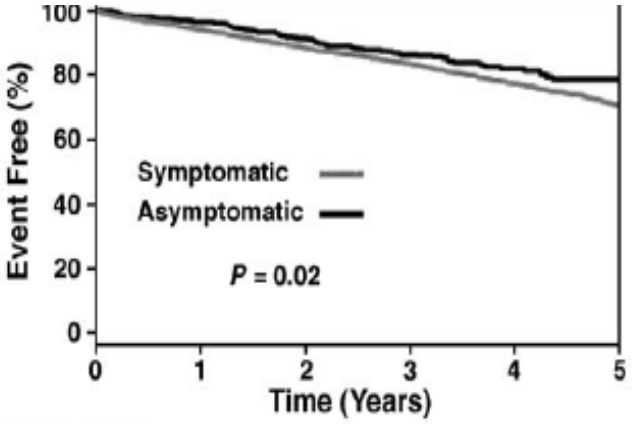
Columbia, Mo, Oklahoma City, Okla, Marshfield, Wis, Portland, Ore, Jacksonville, Fla, and Seattle, Wash



Numbers of Deaths

Symptomatic:	0(0%)	149(4%)	294(8%)	424(13%)	535(17%)	598(23%)
Asymptomatic:	0(0%)	9(2%)	29(6%)	43(10%)	54(14%)	60(19%)

Primary end point: all cause of mortality.



Numbers of Events

Symptomatic:	0(0%)	215(6%)	411(12%)	563(17%)	701(23%)	774(29%)
Asymptomatic:	0(0%)	17(4%)	42(8%)	62(14%)	73(18%)	78(21%)

Death, disabling stroke or anoxic encephalopathy, major central nervous system hemorrhage, or cardiac arrest.

Cox model adjusted for differences at baseline: no differences in outcome (mortality; stroke) between symptomatic and asymptomatic pts

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Caso clinico
… quale antitrombotico…
"idealmente" ?

-74 aa … tp con ACE-I, Amlodipina, Simvast, Clopidogrel … ma perchè…

-A 58 aa Ip art

-A 68 anni disartria a rapida risoluzione → al PS PA 170/100 ; TC neg; ECG con bradi sinus e BBD; Doppler carot, Test coag, Eco e Holter neg. No PFO. Dgn: TIA emisferico dx. Tp ASA, ACE-I , amlodipina.

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Potential Stroke Risk Reduction for Individuals

Factor	Risk reduction with treatment
Hypertension	30% - 40%
Smoking	50% within 1 year, baseline after 5 years
Diabetes	44% reduction in hypertensive diabetics with tight blood pressure control
Hyperlipidaemia	20-30% with statins in patients with known coronary heart disease
Atrial fibrillation (non-valvular)	68% (warfarin) 21% (aspirin)

Now that many risk factors are established, greater emphasis should be placed on identifying high stroke-risk patient populations for intensive risk-factor modification and antithrombotic treatment.

Reference:

Goldstein et al. Circulation 2001; 103: 163-182.

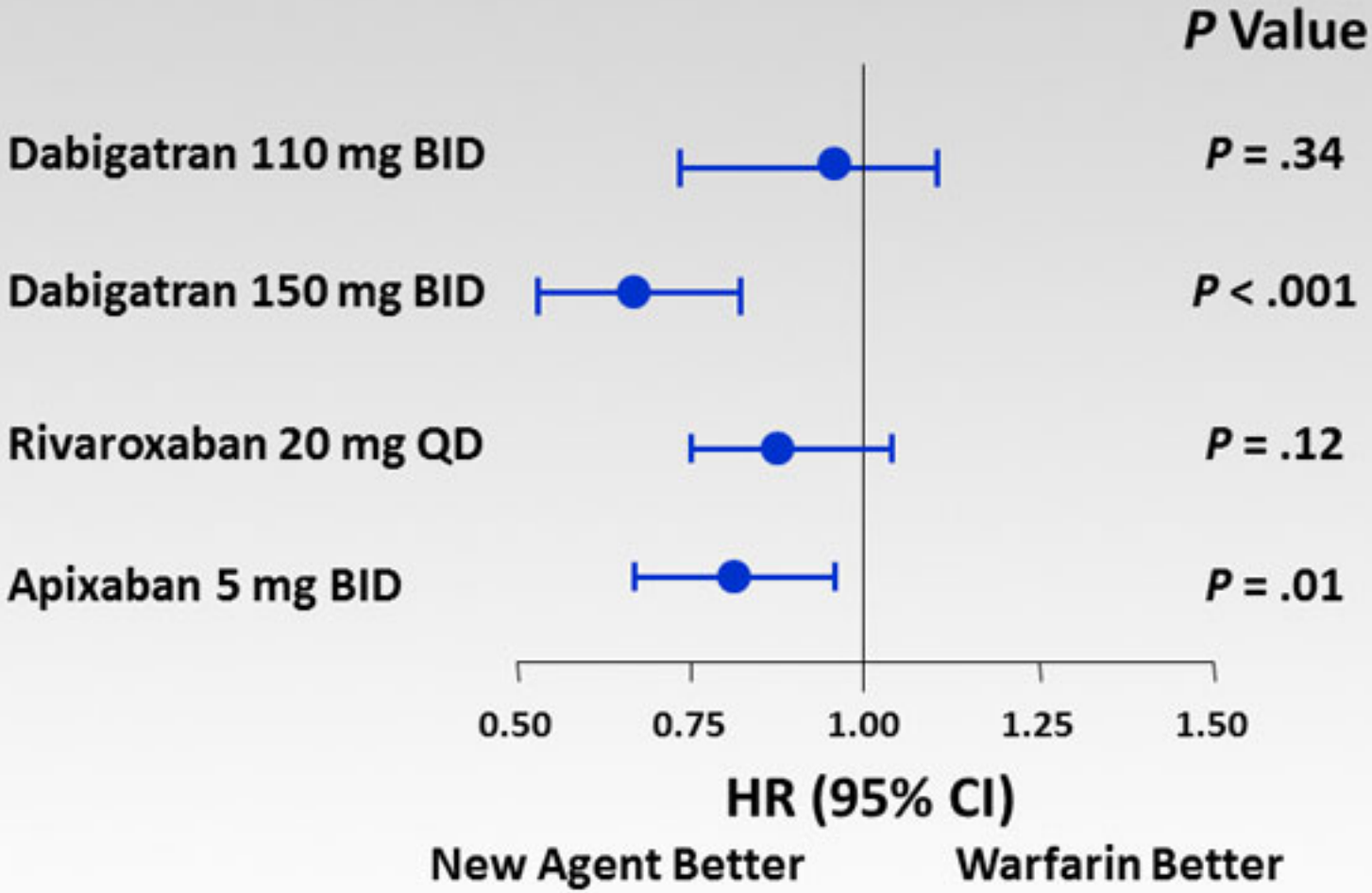
Stroke Prevention in Atrial Fibrillation

… A NEW PERSPECTIVE …

Treatment	Stroke Risk (%/year)
No Therapy	4.5
ASA	3.7
ASA + Clopidogrel	2.8
Warfarin	1.7
Dabigatran 110	1.5
Dabigatran 150	1.1

76 %

Recent Oral Anticoagulation Trials:
Stroke or Systemic Embolism



Connolly SJ, et al. *N Engl J Med*. 2009;361:1139–1151.
Patel MR, et al. *N Engl J Med*. 2011;365:883–891.
Granger C, et al. *N Eng J Med*. 2011;365:981–992.

Arrhythmia & EP
theheart.org from NEJM
Medscape EDUCATION

- It is important to detect silent AF, BUT how to detect it ?

Prolonged Rhythm Monitoring for the Detection of Occult Paroxysmal Atrial Fibrillation in Ischemic Stroke of Unknown Cause

Raymond C.S. Seet, MD; Paul A. Friedman, MD; Alejandro A. Rabinstein, MD

Circulation 2011, 124:477-486

Table 2. Detection of New-Onset Atrial Fibrillation in Unselected Populations of Stroke and Transient Ischemic Attack Patients

Study, Year	Study Population	Mean Age, y	Detection Methods	Eligible Patients After Excluding Established AF, n	Patients Diagnosed With New AF, n	Detection Rate of New AF, %
Shafqat et al, 2004[41]	Stroke	67	Ambulatory ECG (24 h)	210	5	2.4
Yu et al, 2009[42]	Stroke	75	Ambulatory ECG (24 h)	96	9	9.4
Douen et al, 2008[43]	Stroke	NM	Inpatient serial ECG (72 h)+ambulatory ECG (72 h)	144	20	13.9
Koudstaal et al, 1986[46]	TIA	61	Ambulatory ECG (24 h)	96	1	1.0
Shaer et al, 2004[47]	Stroke/TIA	67	Ambulatory ECG (24 h)	404	9	2.2
Alhadramy et al, 2010[48]	Stroke/TIA	65	Ambulatory ECG (24 h)	413	11	2.7
Vivanco Hidalgo et al, 2009[49]	Stroke/TIA	79	Inpatient continuous ECG (55 h)	465	16	3.4
Sposato et al, 2011[50]	Stroke/TIA	67	Inpatient continuous ECG (5 d)	155	21	13.5
Rem et al, 1985[51]	Stroke/TIA	66	Inpatient continuous ECG (48 h)+ambulatory ECG (24 h)	171	6	3.5
Stahrenberg et al, 2010[52]	Stroke/TIA	68	Ambulatory ECG (7 d)	220	28	12.7
Lazarro et al, 2011[59]	Stroke/TIA	63	Inpatient continuous ECG (48 h)+ambulatory ECG (24 h)	133	8	6.0
Combined				2507	134	5.3

Prolonged Rhythm Monitoring for the Detection of Occult Paroxysmal Atrial Fibrillation in Ischemic Stroke of Unknown Cause

Raymond C.S. Seet, MD; Paul A. Friedman, MD; Alejandro A. Rabinstein, MD

Circulation 2011, 124:477-486

Table 3. Detection of New-Onset Atrial Fibrillation in Selected Populations of Stroke and Transient Ischemic Attack Patients

Study, Year	Study Population	Mean Age, y	Method of Patient Selection	Detection Methods	Eligible Patients After Excluding Established AF, n	Patients Diagnosed With New AF, n	Detection Rate of New AF, %
Schuchert et al, 1999[44]	Stroke	61	Suspected embolic etiology	Ambulatory ECG (72 h)	82	4	4.9
Dion et al, 2010[45]	Stroke	49	Cryptogenic stroke+ negative 24-h ECG	Implantable loop recorder (14.5 mo)	24	0	0
Jabaudon et al, 2004[53]	Stroke/TIA	67	Negative 24-h ECG	Ambulatory ECG (7 d)	88	5	5.7
Rizos et al, 2010[54]	Stroke/TIA	72	Age >60 y	Inpatient continuous ECG (48 h)+ambulatory ECG (24 h)	136	29	21.3
Gaillard et al, 2010[55]	Stroke/TIA	64	Negative 24-h ECG	Ambulatory ECG (transtelephonic) (30 d)	98	9	9.2
Tayal et al, 2008[56]	Stroke/TIA	66	Negative 24-h ECG	Ambulatory ECG (MCOT) (21 d)	56	3	5.3*
Elijovich et al, 2009[57]	Stroke/TIA	68	Cryptogenic only	Automatic event recorder (30 d)	20	4	20
Barthelemy et al, 2003[58]	Stroke/TIA	64	Cryptogenic stroke+ negative 24-h ECG	Automatic event recorder (4 d)	28	4	14.3
Combined					532	58	10.9

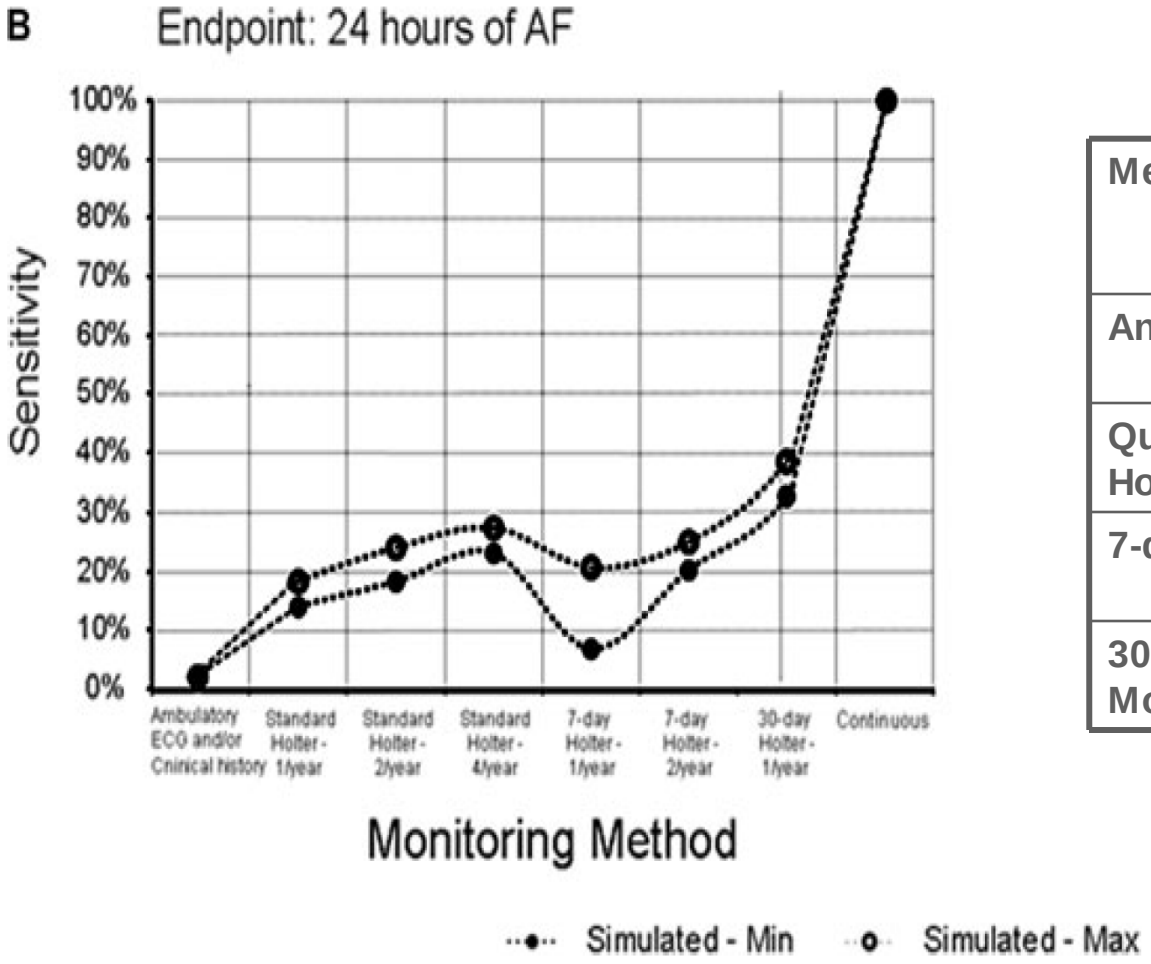
AF indicates atrial fibrillation; TIA, transient ischemic attack; and MCOT, mobile cardiac outpatient telemetry.

*These rates of detection correspond to episodes of paroxysmal AF lasting >30 seconds. In addition, there was a 23% detection rate of paroxysmal AF episodes lasting <30 seconds.

AF Monitoring Options

Technology	Storage	Continuous	Electrodes	Comments
ECG	< 1 minute	Yes	10 on skin	
Holter	24 – 48 hours	Yes	3 on skin	
Event recorder	7 – 28 days	No	3 on skin	Only symptomatic events
Transtelephonic ECG monitoring	Minutes/ day	No	On skin	Discontinuous
External loop recorder	7 – 28 days	Yes	On wrist or 2-3 on skin	
Mobile cardiac outpatient monitoring	Continuous, (<28 days)	Yes	3 on skin	Direct transmission
Insertable loop recorder	Continuous	Yes	Under skin	Implanted
Pacemaker, ICD	Continuous	Yes	Implanted	Implanted, PM/ICD pt.

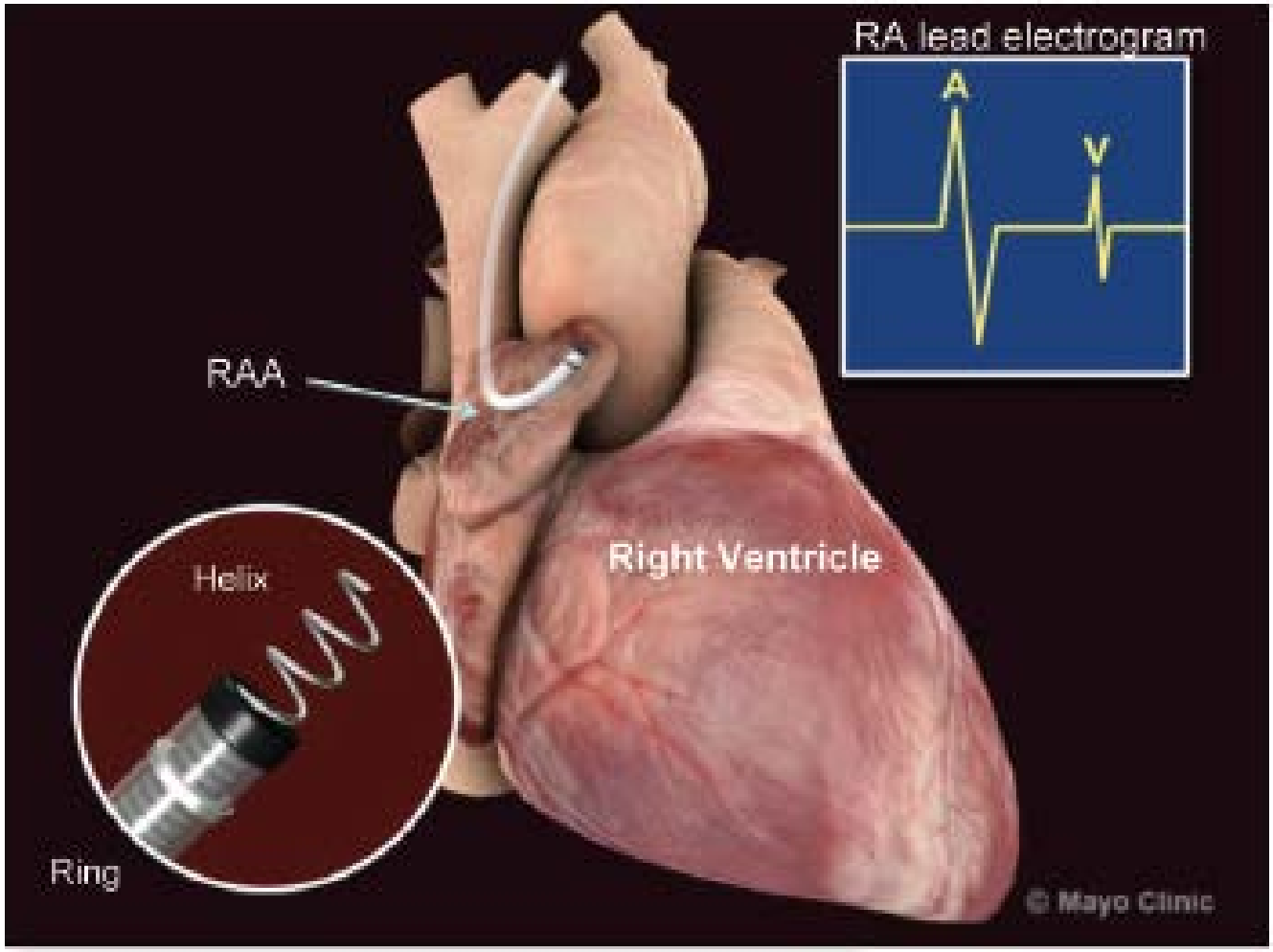
Different monitoring methods to detect AF : variable sensitivity

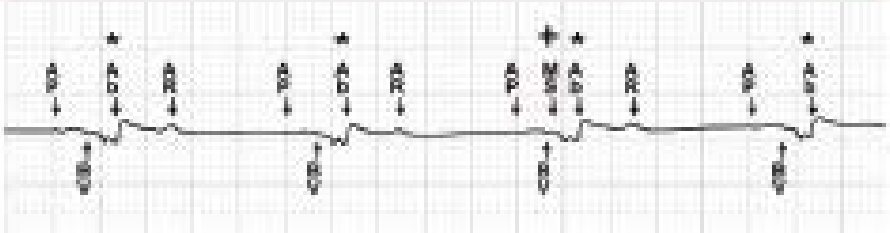


SENSITIVITY

Method	Ziegler 2006	Botto 2009
Annual Holter	**31.3%**	**31%**
Quarterly Holter	54.2%	53%
7-day Monitor	48.9%	48%
30-day Monitor	**64.6%**	**65%**

Botto ,Boriani et al. JCE. 2009;20:241-248
Ziegler et al. Heart Rhythm. 2006; 3: 1445-1452

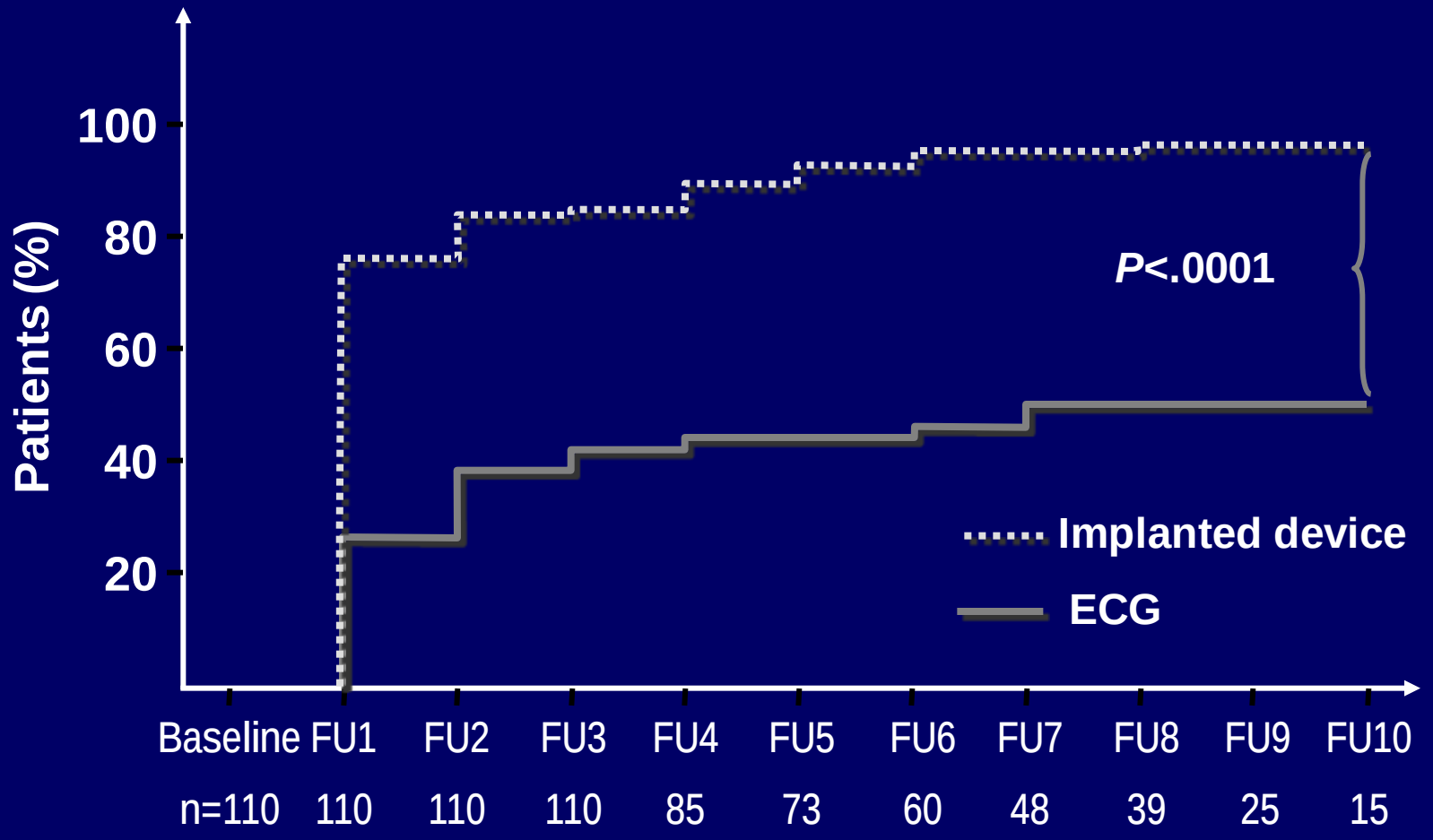

RA lead electrogram
A
V
RAA
Helix
Ring
Right Ventricle
© Mayo Clinic



Detection of Recurrent AF

Electrocardiographic vs Implanted Device Recording

The issue of "silent AF"



FU=follow-up.

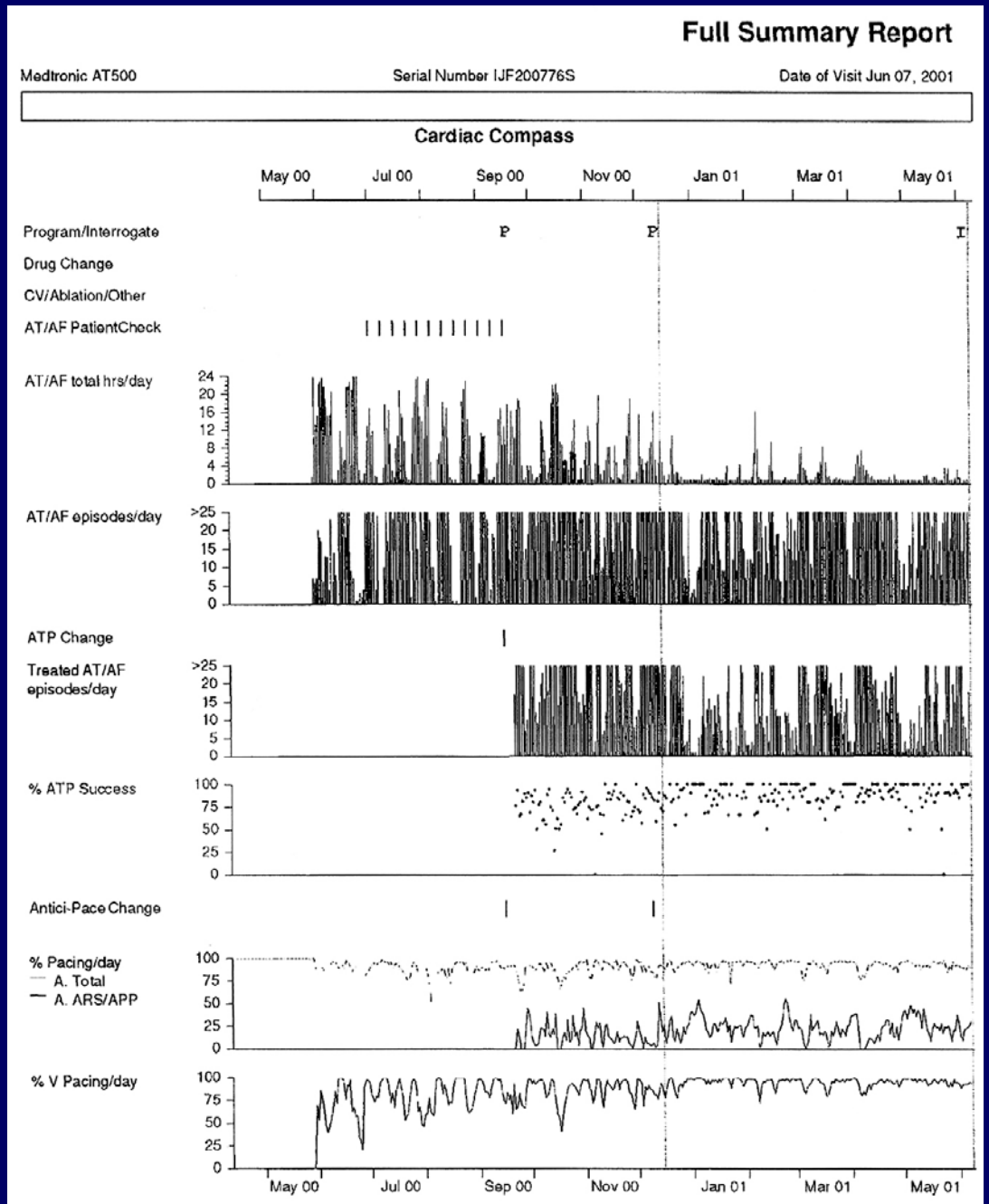
Israel et al. *J Am Coll Cardiol.* 2004;43:47-52.

AF monitoring with devices: Cardiac Compass

AF/AT hours per day

AF/AT episodes per day

Treated AF/AT per day



How to interpret device diagnostics on AF?

What AF duration or amount of AF burden is clinically significant ?

1. 30 seconds
2. 2.5-6 min
3. 1 hour
4. 6 hours
5. 24 hours

European Heart Journal
doi:10.1093/eurheartj/ehq278

EHJ 2010

ESC GUIDELINES

Guidelines for the management of atrial fibrillation

The Task Force for the Management of Atrial Fibrillation of the European Society of Cardiology (ESC)

Any arrhythmia that has the ECG characteristics of AF and lasts sufficiently long for a 12-lead ECG to be recorded, or at least 30 s on a rhythm strip, should be considered as Atrial Fibrillation.

How to interpret device diagnostics on AF?

What AF duration or amount of AF burden is clinically significant ?

- 30 seconds NO!
- 5-6 min
- 1 hour
- 6 hours
- 24 hours

Subclinical Atrial Fibrillation and the Risk of Stroke

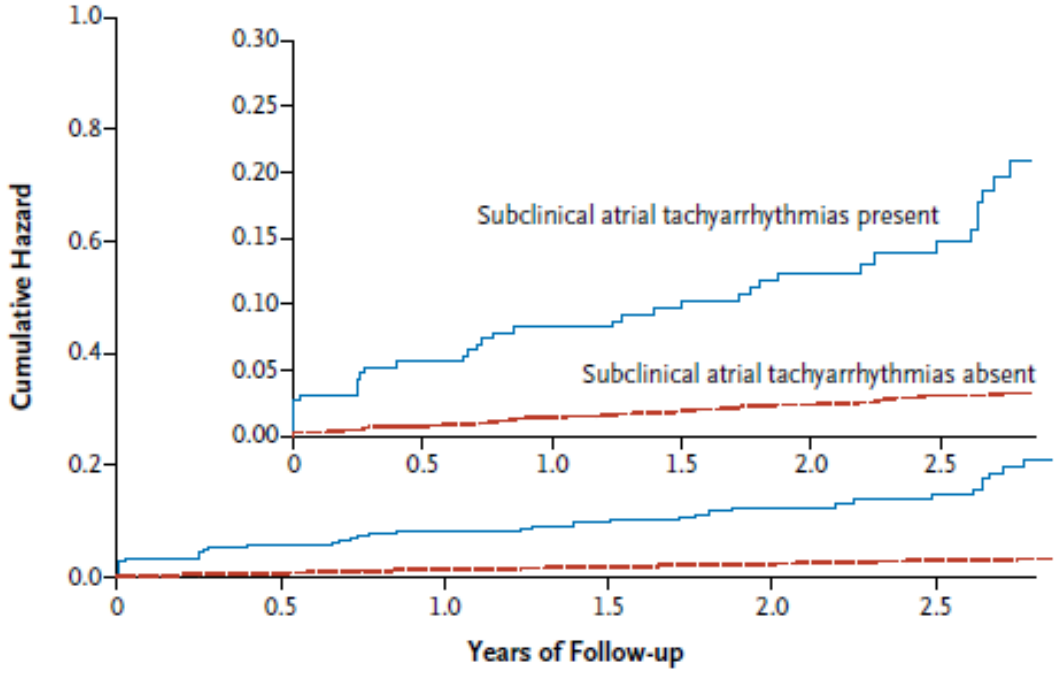
Jeff S. Healey, M.D., Stuart J. Connolly, M.D., Michael R. Gold, M.D., Carsten W. Israel, M.D., Isabelle C. Van Gelder, M.D., Alessandro Capucci, M.D., C.P. Lau, M.D., Eric Fain, M.D., Sean Yang, M.Sc., Christophe Bailleul, M.D., Carlos A. Morillo, M.D., Mark Carlson, M.D., Ellison Themeles, M.Sc., Elizabeth S. Kaufman, M.D., and Stefan H. Hohnloser, M.D., for the ASSERT Investigators*

N Engl J Med 2012;366:120-9.

Device detected subclinical atrial tachy predict clinical arrhythmias
HR 5.56 (3.78–8.17), P<0.001

A Risk of Clinical Atrial Tachyarrhythmias

Episodes of subclinical AT/AF (> 6 min, ≥ 190/m) were almost 8 times as common as episodes of clinical AF



No. at Risk						
Subclinical atrial tachyarrhythmias present	261	236	222	205	160	110
Subclinical atrial tachyarrhythmias absent	2319	2146	2064	1911	1544	1176

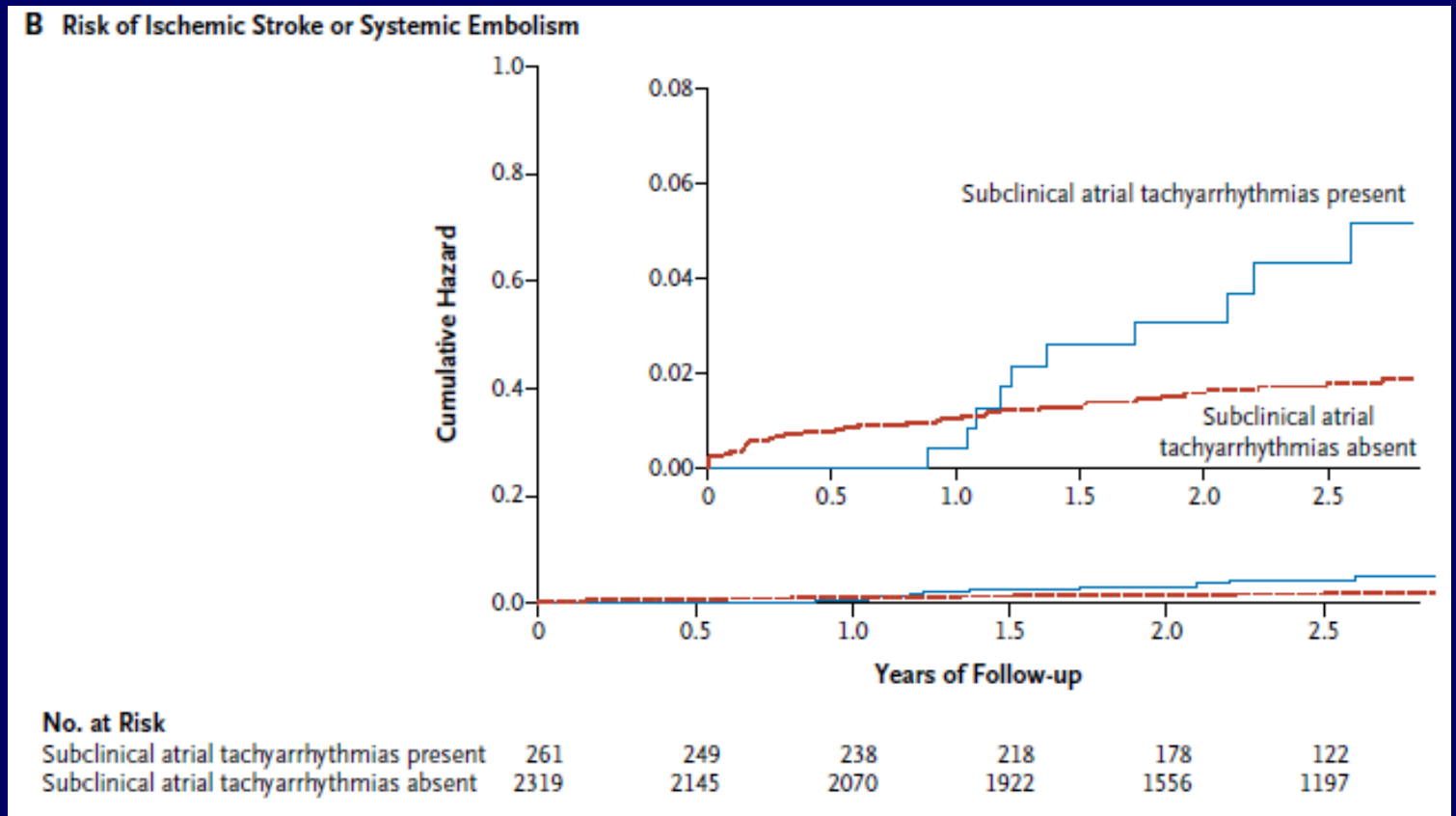
Subclinical Atrial Fibrillation and the Risk of Stroke

Jeff S. Healey, M.D., Stuart J. Connolly, M.D., Michael R. Gold, M.D., Carsten W. Israel, M.D., Isabelle C. Van Gelder, M.D., Alessandro Capucci, M.D., C.P. Lau, M.D., Eric Fain, M.D., Sean Yang, M.Sc., Christophe Bailleul, M.D., Carlos A. Morillo, M.D., Mark Carlson, M.D., Ellison Themeles, M.Sc., Elizabeth S. Kaufman, M.D., and Stefan H. Hohnloser, M.D., for the ASSERT Investigators*

N Engl J Med 2012;366:120-9.

Device detected subclinical atrial tachy predict stroke/ syst embolism

HR 2.49 (1.28–4.85), P=0.007



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Population attributable risk of Stroke/Syst Emb associated with AT/AF = 13%

Table 3. Risk of Ischemic Stroke or Systemic Embolism after the 3-Month Visit, According to Baseline $CHADS_2$ Score and According to Whether Subclinical Atrial Tachyarrhythmias Were or Were Not Detected between Enrollment and the 3-Month Visit.

$CHADS_2$ Score	No. of Patients	Subclinical Atrial Tachyarrhythmias between Enrollment and 3 Months						Hazard Ratio for Ischemic Stroke or Systemic Embolism with Subclinical Atrial Tachyarrhythmias (95% CI)*
		Present			Absent			
		no. of patients	*no. of events*	%/yr	*no. of patients*	*no. of events*	%/yr	
1	600	68	1	0.56	532	4	0.28	2.11 (0.23–18.9)
2	1129	119	4	1.29	1010	18	0.70	1.83 (0.62–5.40)
>2	848	72	6	3.78	776	18	0.97	3.93 (1.55–9.95)

* The P value for trend is 0.35.

Comprehensive risk reduction in patients with atrial fibrillation: Emerging diagnostic and therapeutic options. A report from the 3rd AFNET/EHRA consensus conference

P. Kirchhof et al. Europace 2012;14:8-27

The conundrum of AF burden.

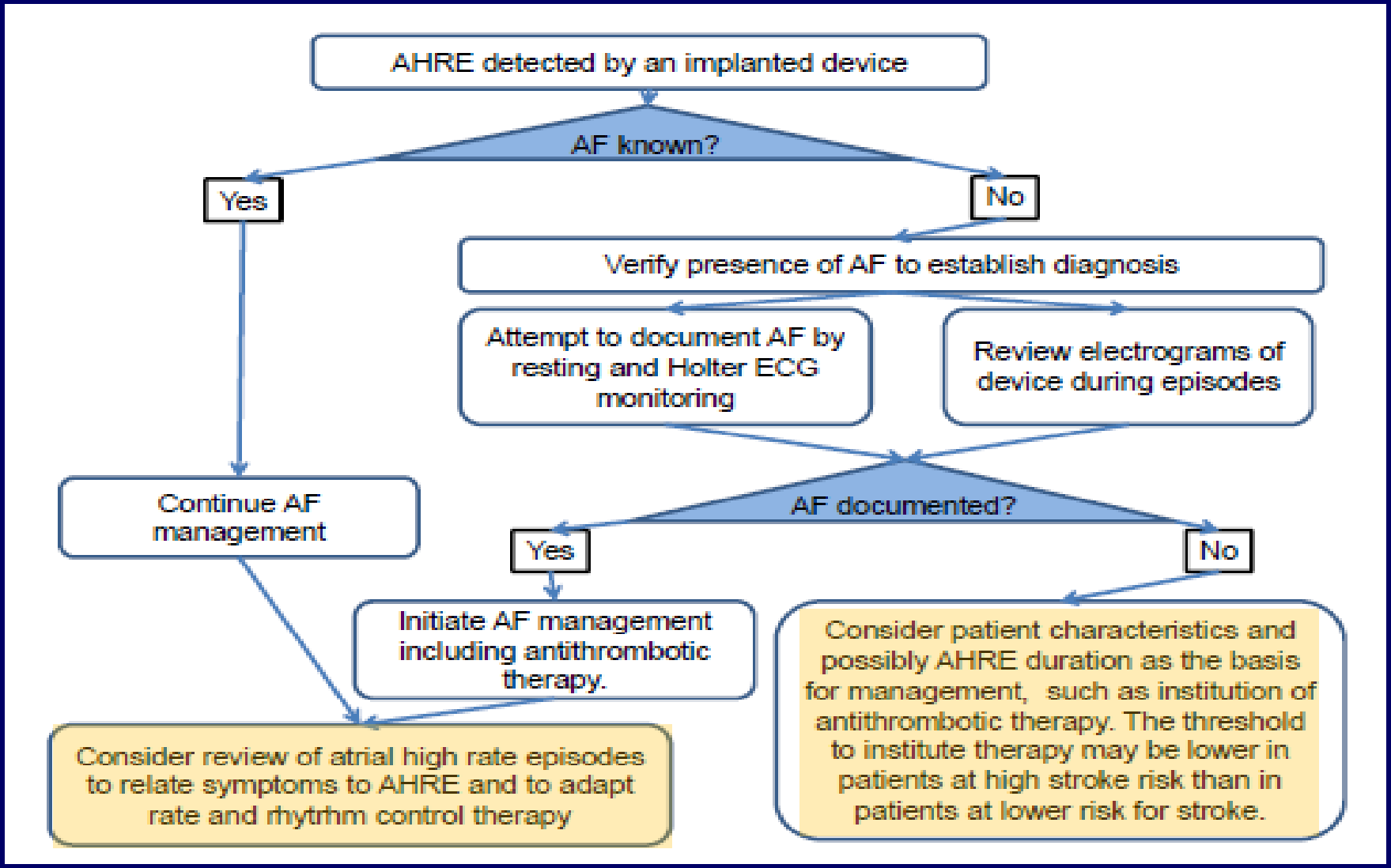
The term "AF burden" has been proposed as the total amount of time spent in AF per monitored time period…

Mainly driven by the technical accuracy of AF detection, a duration of > 5-6 min has been associated with stroke and death….

There is a clear need to unify the definitions of AHRE across device manufacturers,…

Comprehensive risk reduction in patients with atrial fibrillation: Emerging diagnostic and therapeutic options. A report from the 3rd AFNET/EHRA consensus conference

P. Kirchhof et al. Europace 2012;14:8-27



AF-related stroke risk and decision making

Is it possible to improve antithrombotic prescription on the basis of DEVICE-DETECTED AF BURDEN ?
?

Data - Arrhythmia Episodes

☑ VT/VF ☑ AT/AF ☑ SVT View Monitored > 0 sec

Type	ATP Seq	Shocks	Success	Date	Time hh:mm	Duration hh:mm:ss	Avg bpm A/V	Max V bpm	EGM
AT/AF				18-Feb-2009	21:45	01:06:12	351/115	154	EGM
AT/AF				18-Feb-2009	21:07	:37:46	353/104	300	EGM
AT/AF				18-Feb-2009	19:15	01:51:53	364/119	167	EGM
AT/AF				18-Feb-2009	19:09	:05:38	326/134	162	EGM
AT/AF				18-Feb-2009	18:40	:28:52	341/132	167	

#423: ○ Plot ○ EGM ◉ Text Previous Next

Episode #423: 18-Feb-2009 21:45:40

Episode Summary

Initial Type	AT/AF Monitor (spontaneous)
Duration	1.1 hr
A/V Max Rate	500 bpm/154 bpm
A. Median	316 bpm (190 ms)
Activity at onset	Active, Sensor = 67 bpm

Parameter Settings		Zones		A. Interval (Rate)
AT/AF	Monitor	1	AT/AF	350 ms (171 bpm)

Flashback Print... Close

Medtronic — Clinical Service Project

Clinical Service Patient Report - *ANGELS of AF* – versione 1.0 — Data produzione: 19-mar-08

Medico responsabile del servizio Clinical Service: Dr. Dr. Boriani Giuseppe

Centro: Policlinico Sant Orsola-Malpighi - Bologna — Città: Bologna

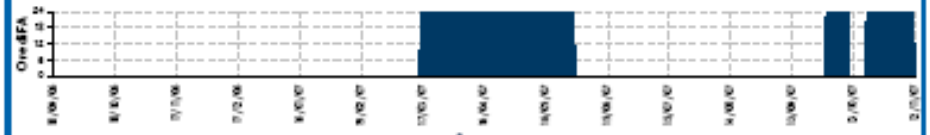
Informazioni di riferimento Clinical Service per il paziente (impianto più recente)

ID paziente: ML160307	Modello: Concerto AT	Numero di impianti: 1
ID reportistica: IT029 0120	Ultimo N° di serie: PVU601986S	Numero di FU: 3
Data inclusione: 16/03/2007	Data ultimo imp.: 16-mar-07	Data Ultimo FU: 12-nov-07

Caratteristiche cliniche associate al rischio tromboembolico

Aritmie atriali pre-impianto: Si (Persistente) — Cardioversioni atriali pre-impianto: No

Aritmie atriali durante il FU: Si (da CRF cliniche) — Si (giornate device con AA >= 6 ore vedi cardiac compass sotto)



Età del paziente al primo impianto: 61	Precedente evento tromboembolico: No
Età del paziente ad oggi: 62	Precedente infarto: No
Storia di scompenso cardiaco: Si	Arteropatia coronarica: No
Frazione di eiezione al basale (%): 20	Ipertensione: N.D.
Stenosi mitralica: N.D.	Diabete: No
Chirurgia valvolare: No	

Stratificazione del rischio tromboembolico

Grado di rischio per il paziente secondo la regola ACCP:	Alto Rischio
Grado di rischio per il paziente secondo la regola CHADS2:	1

Indicazioni a terapia antitrombotica secondo il rischio embolico e storia di terapia

Terapia antitrombotica indicata secondo il rischio embolico		Anticoagulante
Terapia antitrombotica secondo le schede di raccolta dati Clinical Service	Storia di terapia antitrombotica	Nessuno
	Terapia all'ultimo follow-up disponibile	Nessuno

PRA1B - Tracciamento delle scelte cliniche intraprese (per favore, compilare i seguenti campi)

1. Terapia antitrombotica effettivamente seguita dal paziente prima di questa visita:
   ○ terapia anticoagulante ○ terapia antiaggregante ○ nessuna
2. Terapia antitrombotica prescritta/indicata dopo questa visita:
   ○ terapia anticoagulante ○ terapia antiaggregante ○ nessuna
3. Se viene prescritta/indicata una nuova terapia, specificare se:
   ○ direttamente da me ○ attraverso una lettera al cardiologo o al medico curante
4. Se viene prescritta una terapia differente da quella indicata dalle linee guida, per favore specificare i motivi

.....
.....
.....
.....

Questo report ed i documenti che lo accompagnano hanno scopo puramente informativo.
Le informazioni sullo stato di salute possono cambiare anche rapidamente:
perciò dovrebbe verificare eventuali necessità di aggiornamento delle informazioni.
Le informazioni presenti su questo report, infatti, non possono sostituirsi al rapporto medico-paziente.
Medtronic non si propone alcuna attività di tipo medico né fornisce consigli medici:
ogni decisione medico-terapeutica rimane affidata ai Suoi giudizi medici ed alle Sue diagnosi.

Clinical Service

Patient Report to Physicians

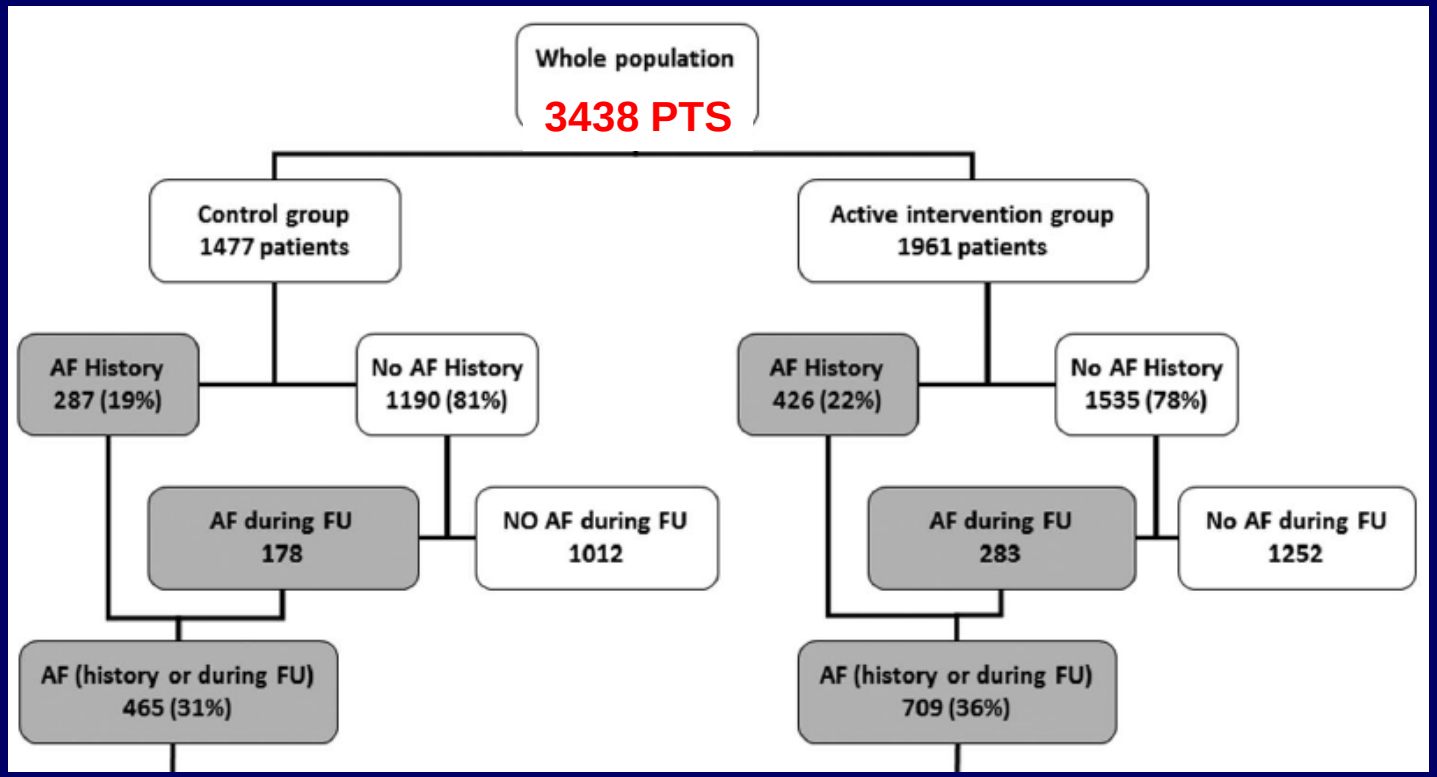
- Patient data
- AT/AF hystory and recurrences
- Thromboembolic risk
  - CHADS2 and ACCP
- Anticoagulant therapy

Improving Thromboprophylaxis Using Atrial Fibrillation Diagnostic Capabilities in Implantable Cardioverter-Defibrillators

The Multicentre Italian ANGELS of AF Project

Giuseppe Boriani, MD, PhD; Massimo Santini, MD; Maurizio Lunati, MD; Maurizio Gasparini, MD; Alessandro Proclemer, MD; Maurizio Landolina, MD; Luigi Padeletti, MD; Giovanni Luca Botto, MD; Alessandro Capucci, MD; Stefano Bianchi, MD; Mauro Biffi, MD; Renato Pietro Ricci, MD; Marco Vimercati, BS; Andrea Grammatico, BS; Gregory Y.H. Lip, MD; Italian ClinicalService Project

Circulation Cardiovasc Qual Outcomes, E-pub February 28, 2012



In Angels of AF arm (46% pts on OAC at baseline) reports on AF burden (AF/AT > 171/m ≥ 6 hrs) + CHADS/ ACCP risk triggered institution of OAC in 10.5 % and APL tx in 1% of pts

Improving Thromboprophylaxis Using Atrial Fibrillation Diagnostic Capabilities in Implantable Cardioverter-Defibrillators

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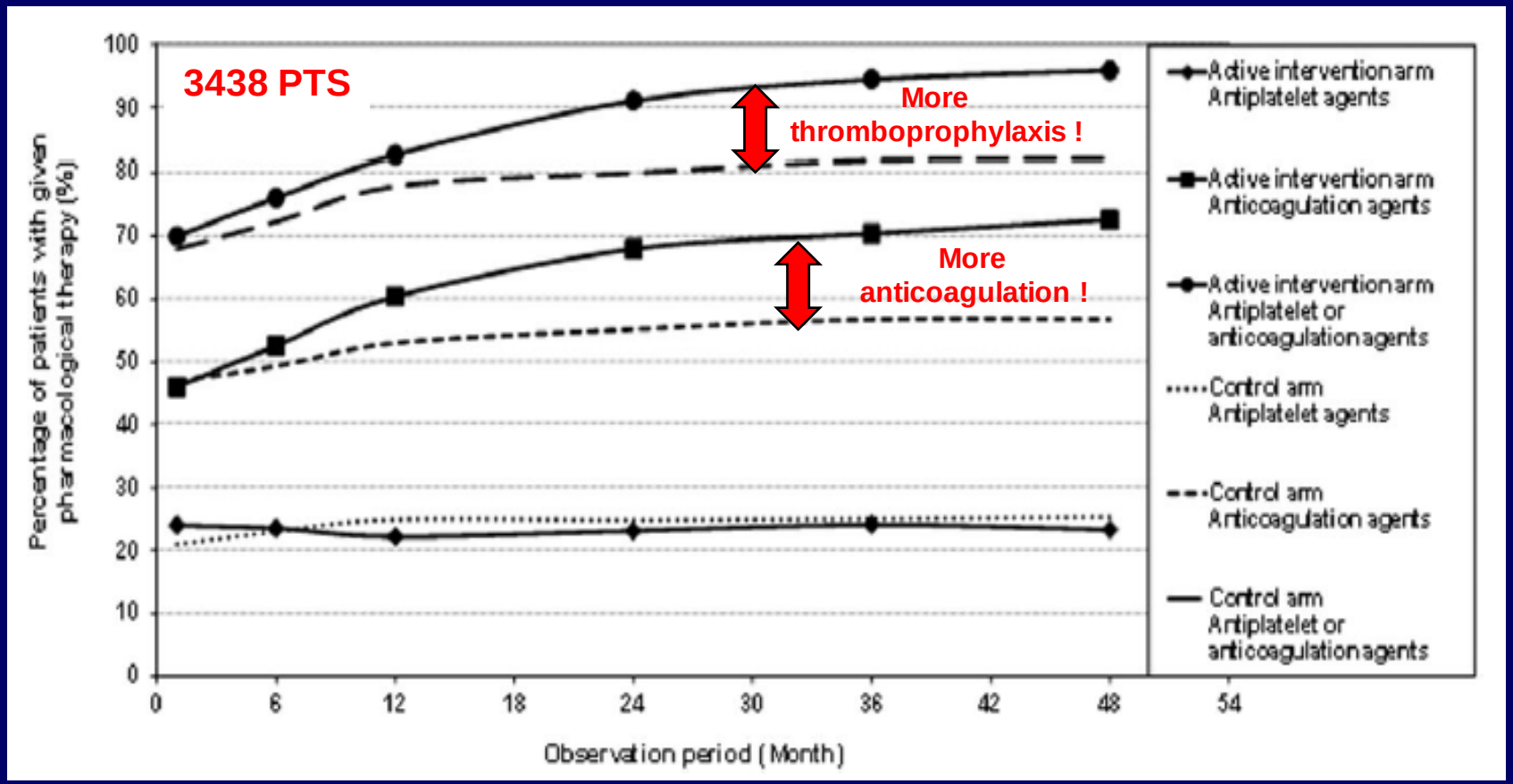
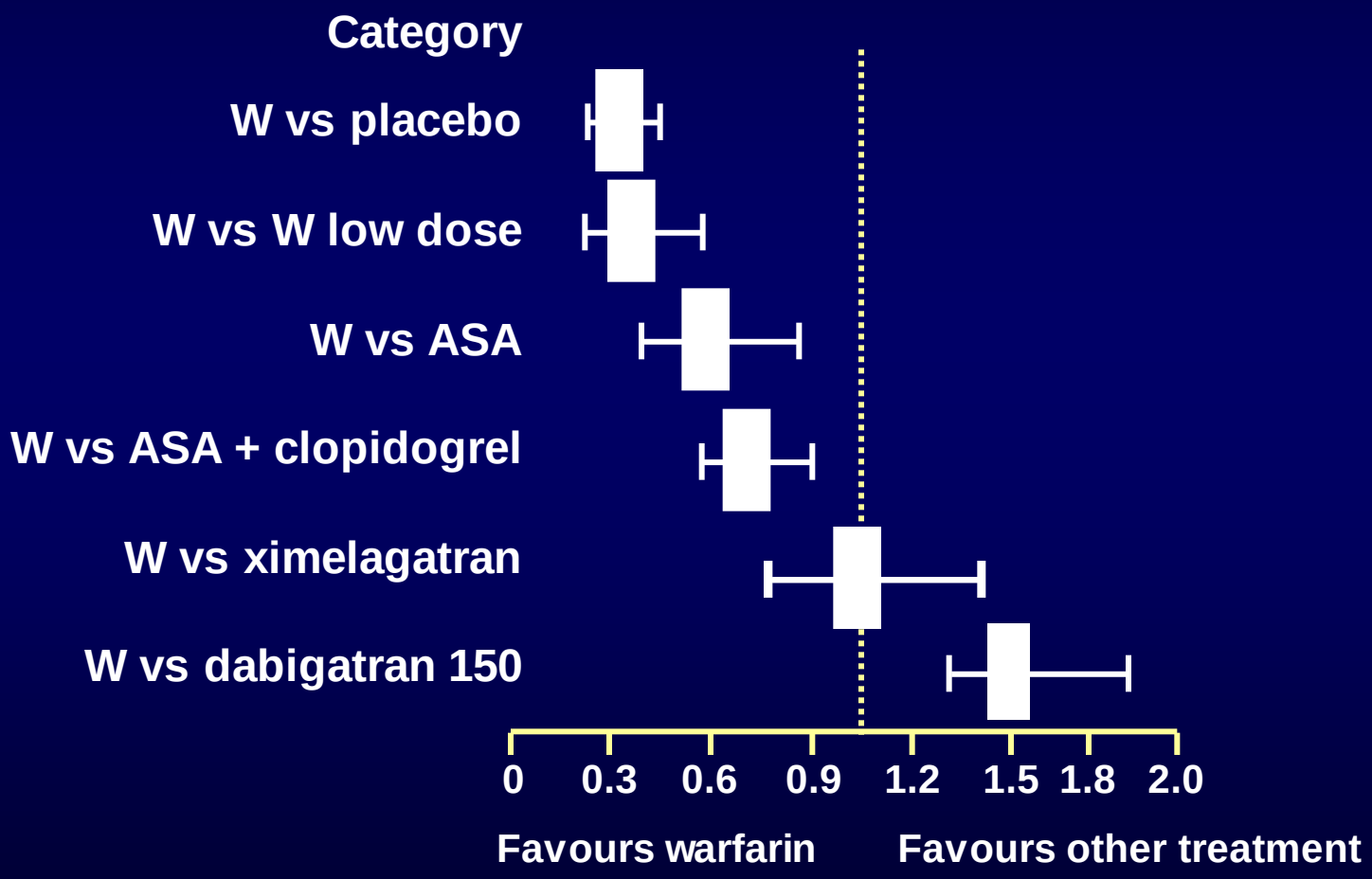
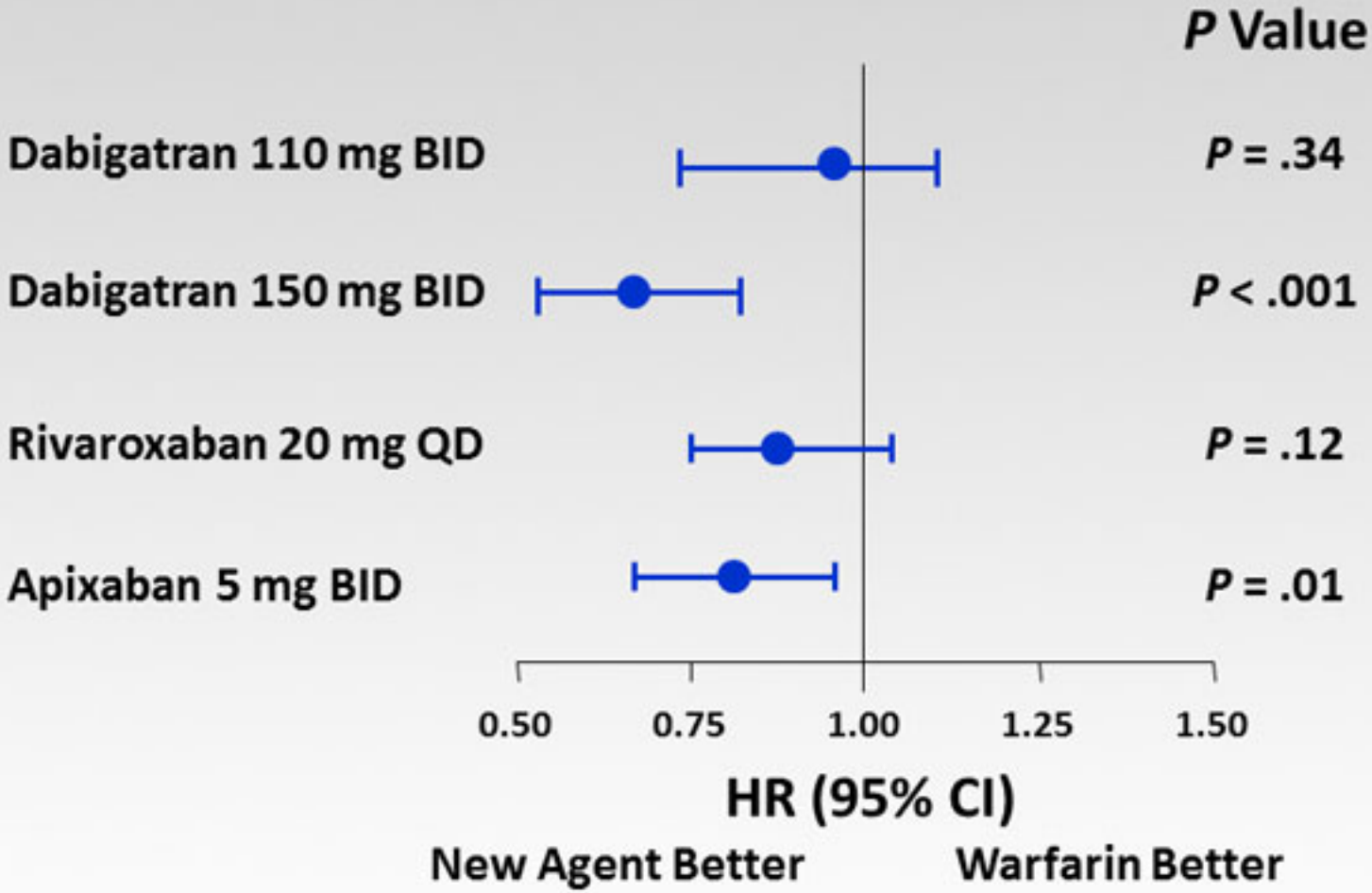


Meta-analysis of ischaemic stroke or systemic embolism



Camm J.: Oral presentation at ESC on Aug 30th 2009

Recent Oral Anticoagulation Trials:
Stroke or Systemic Embolism



Connolly SJ, et al. *N Engl J Med*. 2009;361:1139–1151.
Patel MR, et al. *N Engl J Med*. 2011;365:883–891.
Granger C, et al. *N Eng J Med*. 2011;365:981–992.

Implantable devices

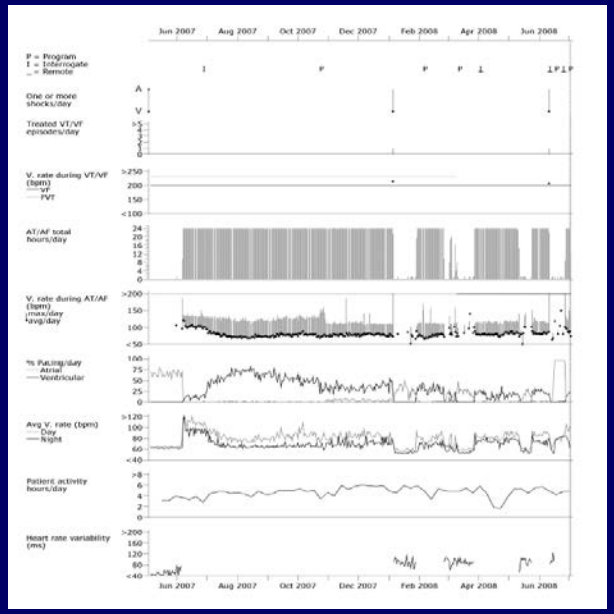
Diagnostics data on AF burden

New perspective

ILR

Pacemaker

ICD



Detection of AF burden (> 5 min) through implanted devices as signpost for AF- related stroke risk and basis for appropriate decision-making both in secondary and primary prevention

NASPE 25th ANNIVERSARY SERIES

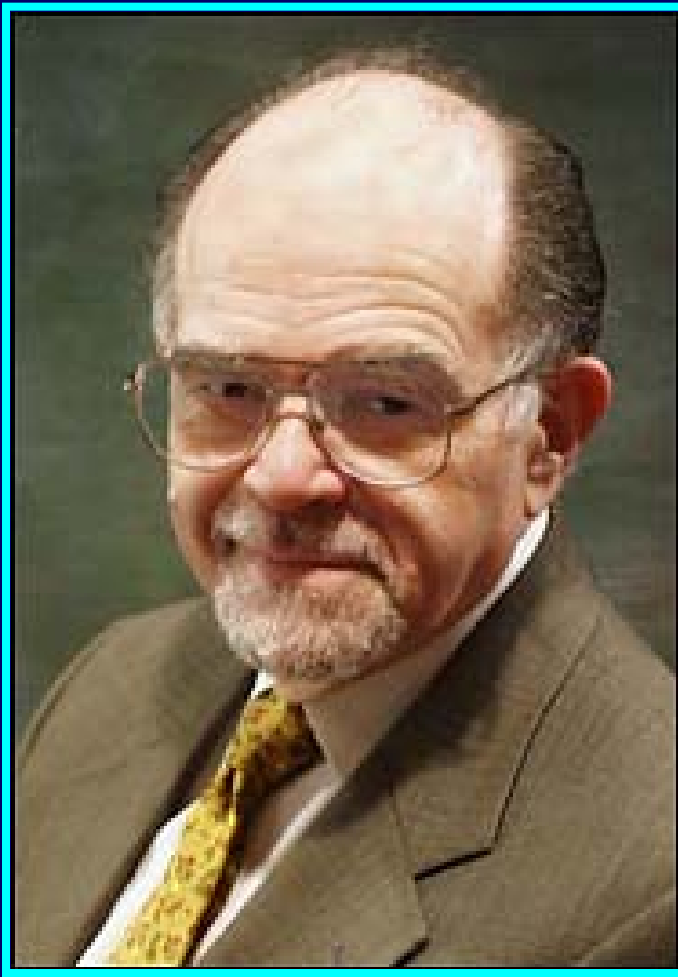
Heart Rhythm (2004) 115C–126C

Cardiac Pacing: How It Started, Where We Are, Where We Are Going

DAVID L. HAYES* and SEYMOUR FURMAN

From the Albert Einstein College of Medicine, Montefiore Medical Center, Bronx, New York and the *Division of Cardiovascular Diseases and Internal Medicine, Mayo Clinic, Mayo College of Medicine, Rochester, Minnesota

… role of devices today:
to provide not only therapy but also diagnostic information through monitoring



Furman S
Cardiac pacing - an endless frontier
Med Instrum. 1973 May-Aug;7(3):168-9.