



HRC2011

2nd - 5th October 2011

Hilton Birmingham Metropole Hotel, Birmingham, UK

Education
Technology
Diversity

Atrial Fibrillation, a silent epidemic? How to find the missing quarter.

NHS Improvement, 3rd October 2011

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Overview

- What is known about AF prevalence
- Silent Atrial Fibrillation
- Screening for Atrial Fibrillation
 - Primary screening in General Practice
 - Secondary screening following stroke

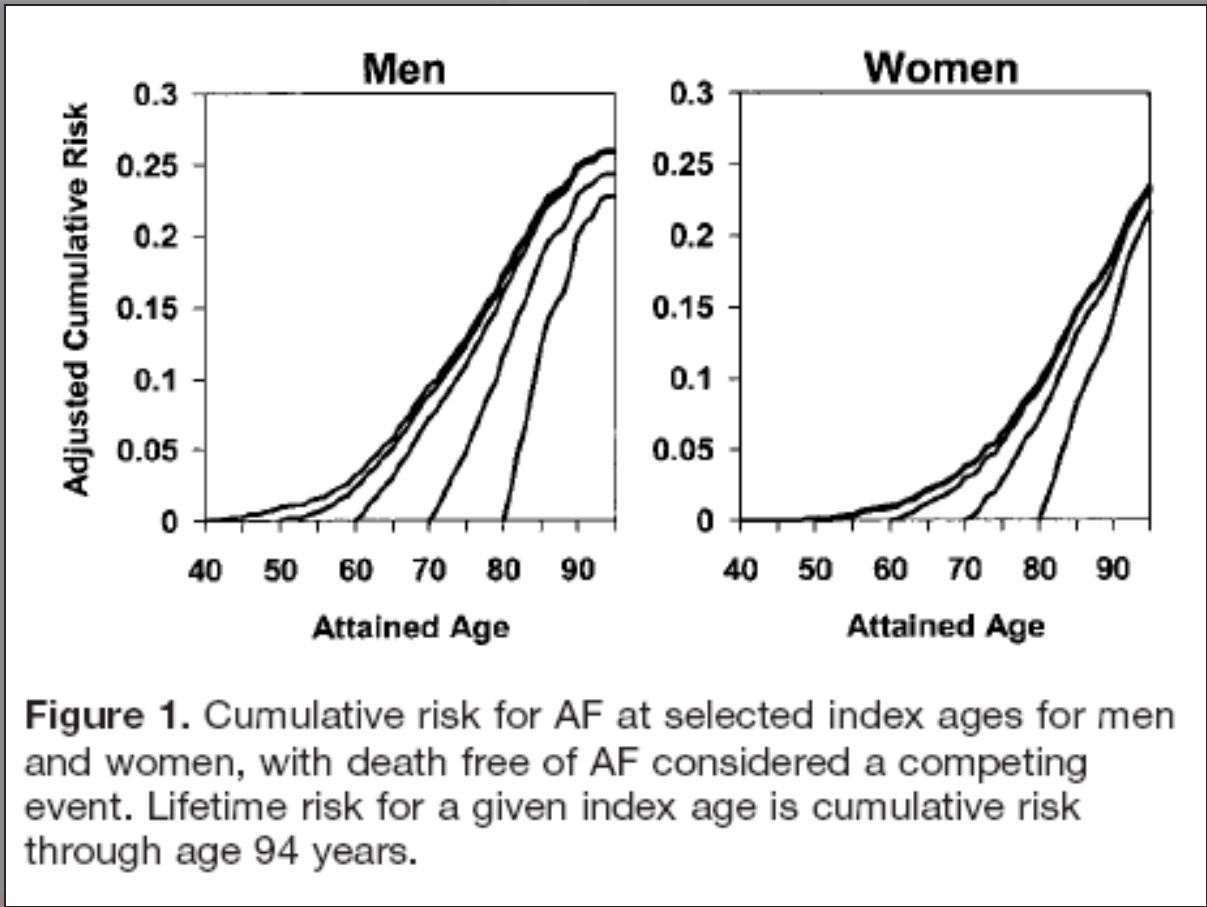
AF Is Associated with Serious Events in Different Vascular Territories¹

Event	No. of patients (%) (n=3,298)
Stroke*	151 (4.6%)
Vascular death	177 (5.4%)
Transient ischemic attack	30 (0.9%)
Peripheral thromboembolism	26 (0.8%)
Myocardial infarction	46 (1.4%)

Data from meta-analysis of randomized controlled trials in patients with AF¹

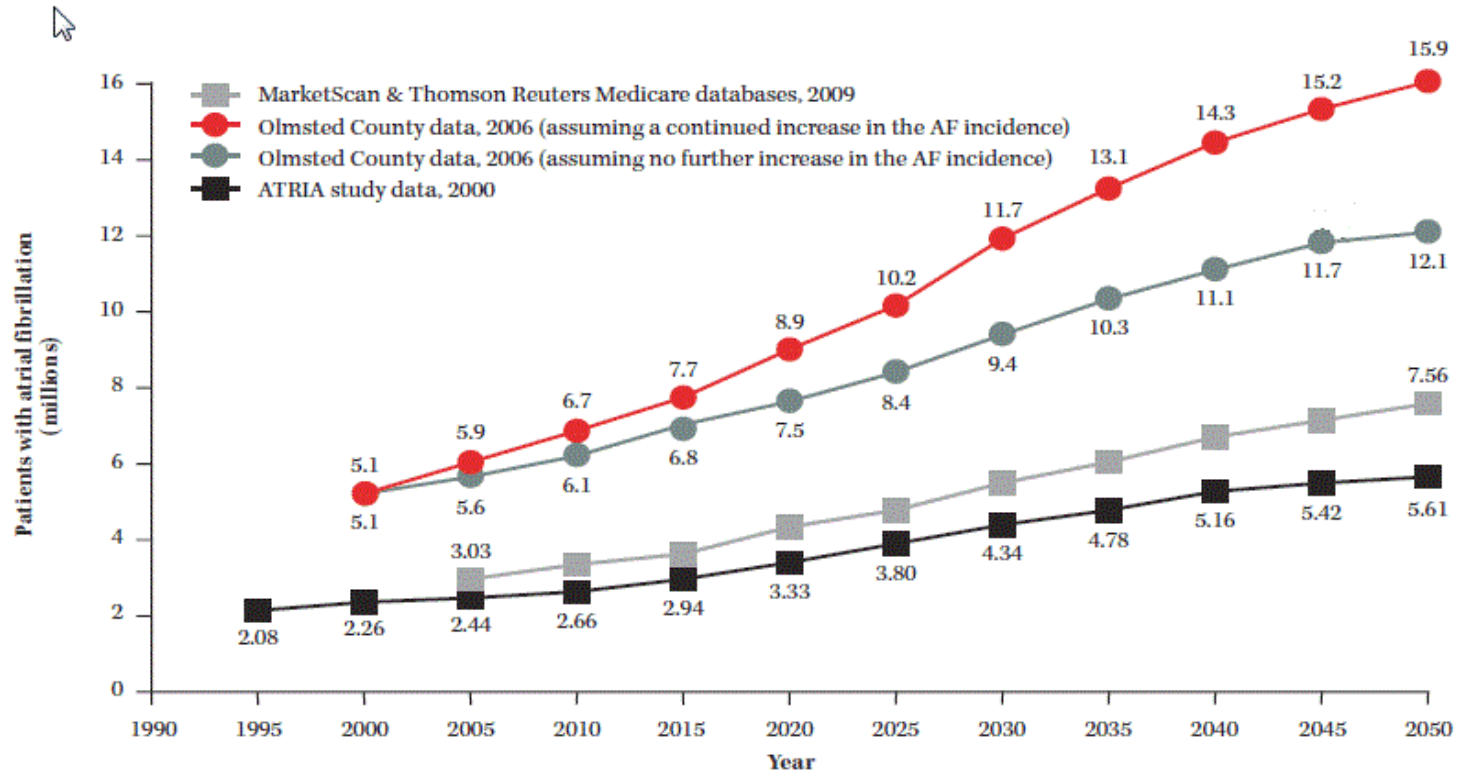
*Fatal or at least moderately disabling. ¹Taylor FC *et al. BMJ* 2001; 322: 321–326.

Lifetime risk of developing Atrial Fibrillation



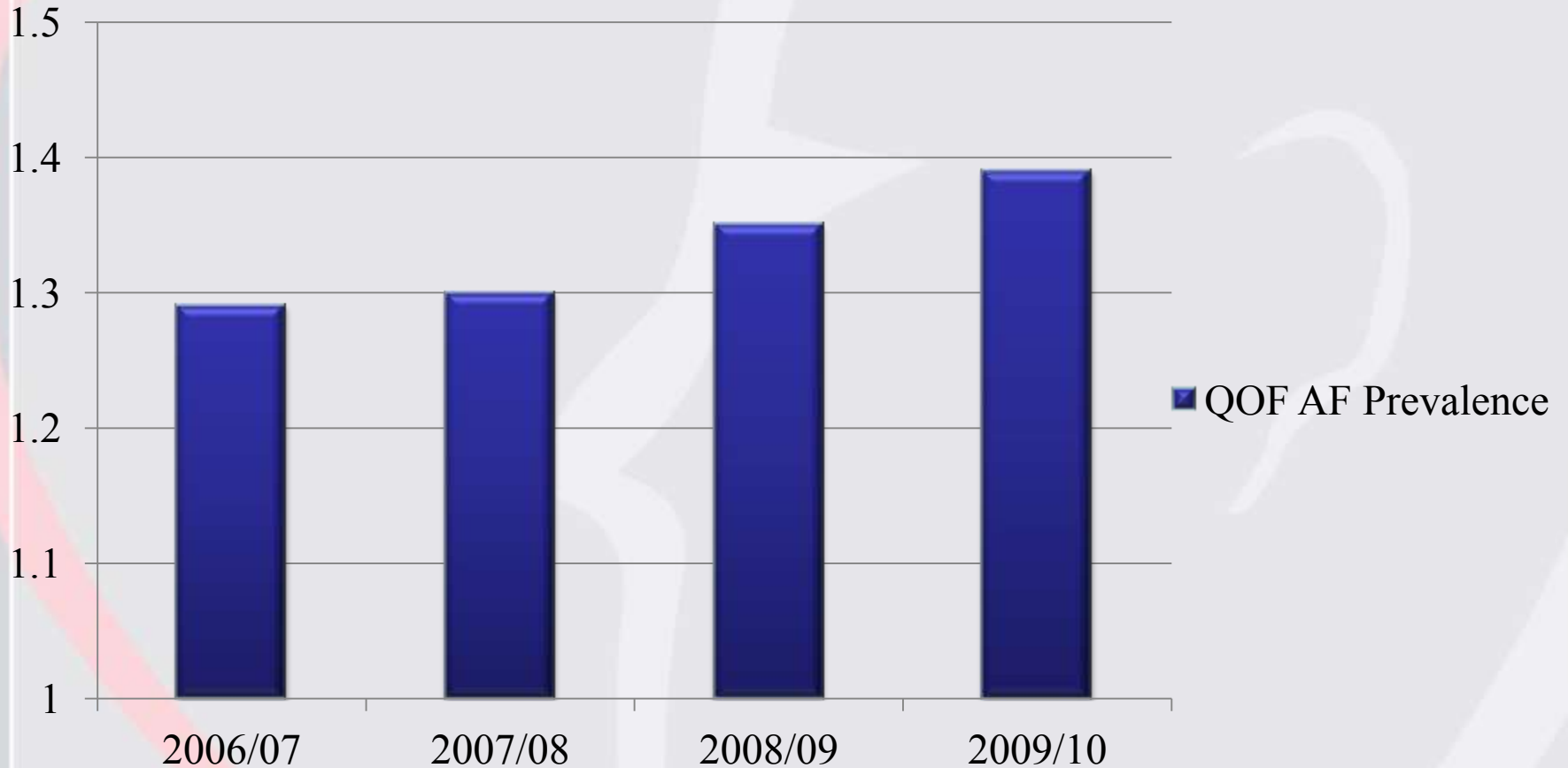
Atrial Fibrillation – an emerging epidemic

Figure 1: Predictions of the increase in atrial fibrillation in the US

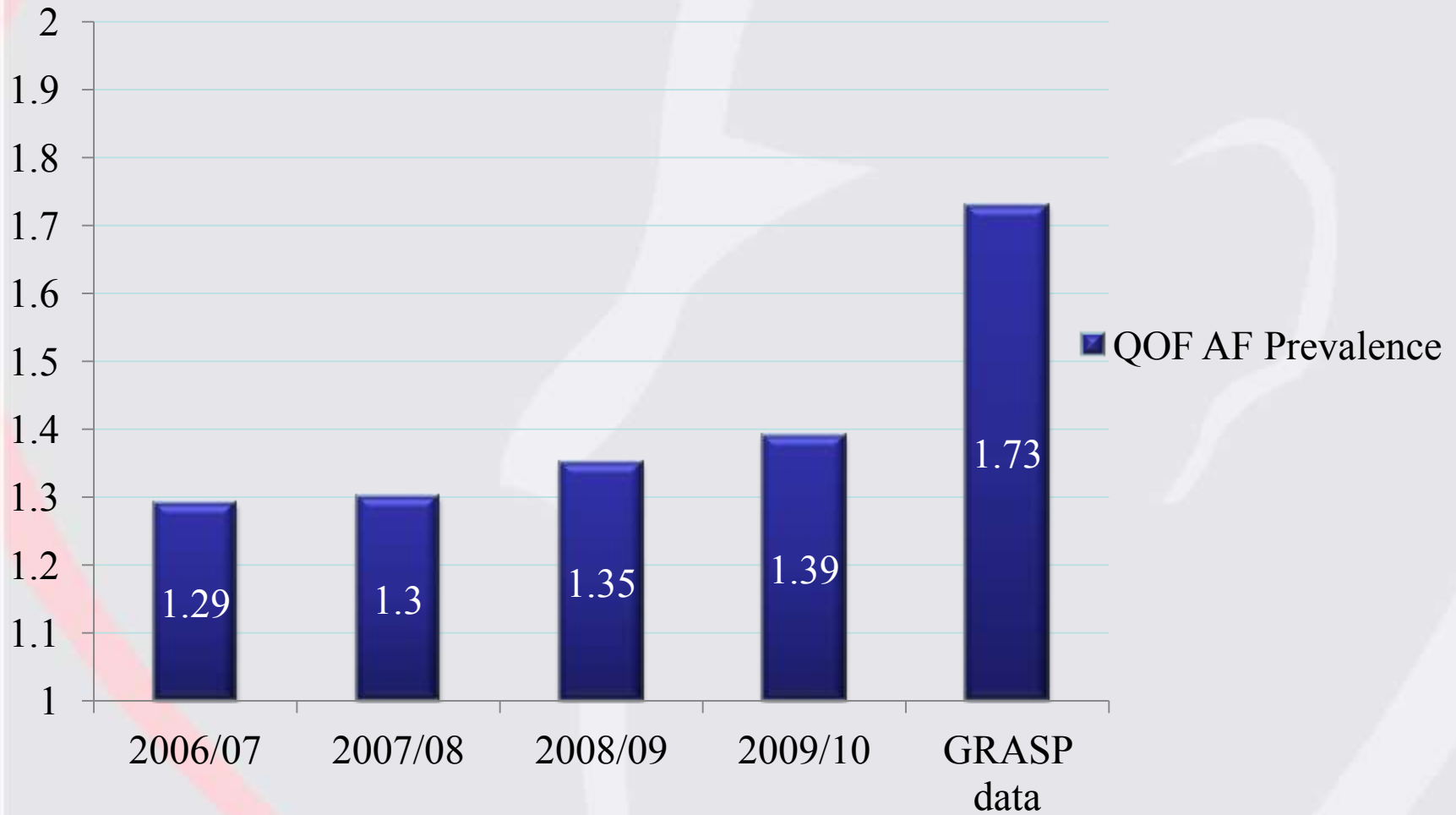


The prevalence of AF will grow dramatically in the coming decades as the elderly proportion of the population increases. Projected numbers of patients with AF by 2050 are based on current US estimates.

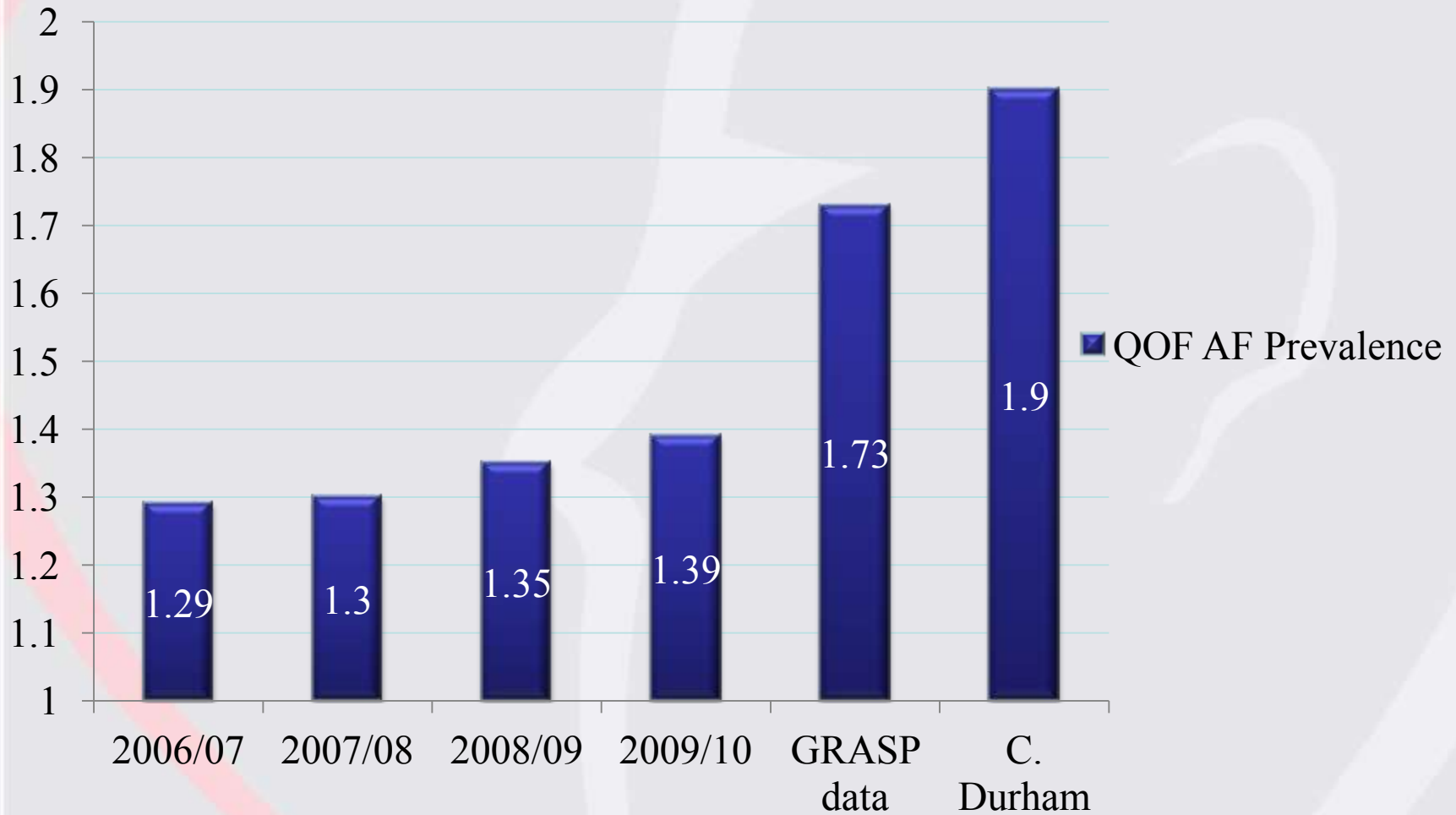
QOF AF Prevalence



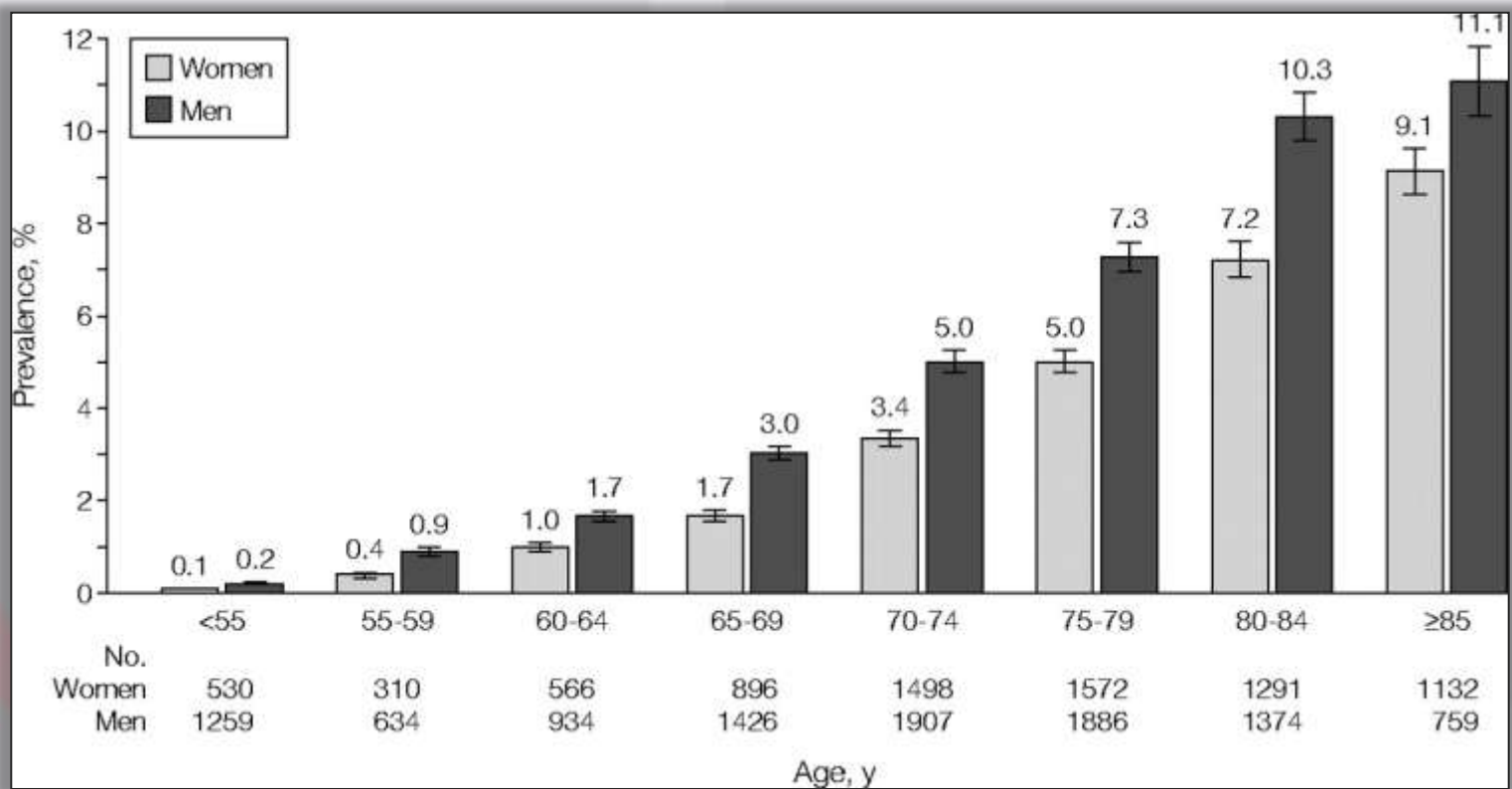
AF Prevalence



AF Prevalence



Prevalence of diagnosed Atrial Fibrillation stratified by Age and Sex



Prevalence of atrial fibrillation in patients aged 65 and over: SAFE

Table 3 | Prevalence and detection rate of new cases by age at start of study and sex. Figures are numbers (percentages)

Group	Men			Women			Total
	65-74	75-84	≥85	65-74	75-84	≥85	
Baseline prevalence							
Control	74/1216 (6.1)	84/703 (11.9)	25/156 (16.0)	44/1378 (3.2)	106/1050 (10.1)	56/420 (13.3)	389/4923 (7.9)
Opportunistic	70/1304 (5.4)	63/650 (9.7)	24/148 (16.2)	48/1448 (3.3)	91/1005 (9.1)	44/375 (11.7)	340/4930 (6.9)
Systematic	69/1318 (5.2)	67/647 (10.4)	15/154 (9.7)	68/1391 (4.9)	70/1022 (6.8)	50/396 (12.6)	339/4928 (6.9)
12 month prevalence							
Control	81/1213 (6.7)	91/699 (13.0)	27/151 (17.9)	55/1377 (4.0)	122/1044 (11.7)	60/418 (14.4)	436/4902 (8.9)
Opportunistic	90/1303 (6.9)	77/647 (11.9)	28/148 (18.9)	59/1443 (4.1)	109/1001 (10.9)	52/373 (13.9)	415/4915 (8.4)
Systematic	90/1312 (6.9)	82/643 (12.8)	23/154 (14.9)	77/1387 (5.6)	88/1012 (8.7)	53/398 (13.5)	413/4906 (8.4)
12 month new case detection							
Control	7/1139 (0.6)	7/615 (1.1)	2/126 (1.6)	11/1333 (0.8)	16/938 (1.7)	4/362 (1.1)	47/4513 (1.0)
Opportunistic	20/1233 (1.6)	14/584 (2.4)	4/124 (3.2)	11/1395 (0.8)	18/910 (2.0)	8/329 (2.4)	75/4575 (1.6)
Systematic	21/1243 (1.7)	15/576 (2.6)	8/139 (5.8)	9/1319 (0.7)	18/942 (1.9)	3/343 (0.9)	74/4562 (1.6)

Prevalence, incidence and lifetime risk of atrial fibrillation: the Rotterdam study

Table 2 Prevalence with 95% CI of AF at baseline by gender and age. The Rotterdam Study 1990-93 ($n = 6808$)

Age group (years)	All			Men			Women		
	<i>n</i>	Cases	Cases/ <i>n</i> ^a	<i>n</i>	Cases	Cases/ <i>n</i> ^a	<i>n</i>	Cases	Cases/ <i>n</i> ^a
55-59	1161	8	0.7 (0.4-1.4)	485	4	0.8 (0.3-2.1)	676	4	0.6 (0.2-1.5)
60-64	1411	24	1.7 (1.2-2.5)	620	16	2.6 (1.6-3.4)	791	8	1.0 (0.5-2.0)
65-69	1291	51	4.0 (3.0-5.2)	597	31	5.2 (3.7-7.3)	694	20	2.9 (1.9-4.4)
70-74	1130	68	6.0 (4.8-7.6)	464	32	6.9 (5.0-9.6)	666	36	5.4 (4.1-7.0)
75-79	855	77	9.0 (7.3-11.1)	330	43	13.0 (9.8-17.1)	525	34	6.5 (4.7-8.9)
80-84	533	72	13.5 (10.9-16.7)	164	25	15.2 (10.5-21.5)	369	47	12.7 (9.7-16.5)
≥85	427	76	17.8 (14.5-21.7)	95	17	17.9 (11.5-26.8)	332	58	17.5 (13.8-21.9)
All	6808	376	5.5 (5.0-6.1)	2590	165	6.0 (5.0-7.0)	4053	206	5.1 (4.5-5.8)

^aDenotes % (95% CI).

Prevalence for patients aged 65 and older: 8.12%

Rationale behind AF screening

- **Common** condition
- Frequently **asymptomatic** or little symptoms
- Grave consequences if undetected:
 - **Thrombo-embolic disease**
 - Tachycardia induced cardiomyopathy
- Test is **acceptable** and non invasive
- **Effective treatment** is available

Secular Trends in Incidence of Atrial Fibrillation in Olmsted County, Minnesota, 1980 to 2000, and Implications on the Projections for Future Prevalence

TABLE 1. Baseline Characteristics of Incident AF Stratified by Calendar-Year of AF Diagnosis

Variable	Calendar-Year of AF Diagnosis					P*
	Overall (n=4618)	1980-1984 (n=826)	1985-1989 (n=938)	1990-1994 (n=1209)	1995-2000 (n=1645)	
Age, y	73.1±14.4	72.9±14.5	72.8±14.1	73.0±14.7	73.4±14.3	0.07
<55	477 (10)	90 (11)	89 (9.5)	137 (11)	161 (9.8)	0.28
55-64	543 (12)	100 (12)	114 (12)	132 (11)	197 (12)	0.93
65-74	1118 (24)	187 (23)	260 (28)	294 (24)	377 (23)	0.23
75-84	1514 (33)	284 (34)	289 (31)	389 (32)	552 (34)	0.86
≥85	966 (21)	165 (20)	186 (20)	257 (21)	358 (22)	<0.05
Men	2365 (51)	412 (50)	469 (50)	629 (52)	855 (52)	0.08
BMI, kg/m ²	27.1±6.2	25.8±5.3	26.2±5.5	27.2±6.3	28.0±6.6	<0.0001
Systolic blood pressure, mm Hg	138±21	137±22	143±21	140±20	135±19	<0.0001
Diastolic blood pressure, mm Hg	78±11	78±11	80±10	79±11	75±11	<0.0001
Total cholesterol, mg/dL	200±49	212±56	207±52	199±47	192±45	<0.0001
Triglycerides, mg/dL	135±140	150±351	126±89	133±93	138±83	0.90
Paroxysmal AF	3428 (74)	590 (71)	701 (75)	891 (74)	1246 (76)	<0.01
Silent AF	1152 (25)	218 (26)	237 (25)	316 (26)	381 (23)	0.06

CARAF*: predictors of symptomatic AF

- Young age
- Paroxysmal AF
- Female sex
- Increased ventricular rate
- Increased blood pressure

*Kerr C et al. *EHJ* 1996; 17: 48-51

Table 1. Prevalence of silent atrial fibrillation in population studies

Author	Study	No of subjects	Methods	Asymptomatic AF
Rose et al ⁷⁰	British civil servants (n = 18403)	70 AF	Limb ECG; 5-year follow-up	43%
Kulbertus et al ⁷¹	Community Hypertension Screening Programme (Liege)	43806 ambulatory subjects	ECG; x-rays; self-report	193 (0.44%)
Psaty et al ³	The Cardiovascular Health Study (A 3-year follow-up of 4844 subjects without AF at baseline)	304 new AF	Annual ECG; self-report; hospital record	36 (11.8%) by annual ECG only
Kerr et al ¹⁵	CARAF: Canadian Registry of Atrial Fibrillation	674 AF	ECG at 3 months, 1 year, then annually	21%
Brand et al ¹⁶	The Framingham Heart Study (n = 5209)	32 lone AF	Biannual ECG; hospital record (30-year follow-up)	20 were diagnosed by biannual ECG
Kopecky et al ¹⁷	Population study, Minnesota (n = 3623 AF)	97 lone AF	Questionnaire; ECG; hospital record (30-year follow-up)	27%
Ciaroni et al ¹⁸	Population Study (n = 244 AF)	46 lone AF	ECG	24%
Camm et al ¹⁹	A group general practice, Sussex (n = 268; age 75–95 years)	106 ambulatory elderly (≥ 75 years old)	24-hour Holter	10.5%
Molaschi et al ²⁰	In-patients hospitalized for non-cardiovascular reasons	340 patients over 80 years	In-hospital ECG	27.9%
Furberg et al ²¹	The Cardiovascular Health Study (n = 5201)	277 AF	ECG; self-report	5.3% AF; 30% by ECG alone
Dietz et al ²³	82 active elderly (mean age 79.5 years)	34 (41%) permanent AF	24-hour Holter	All asymptomatic
Frishman et al ²⁸	The Bronx Longitudinal Aging Study (n = 423; age 75–85 years)	17 (4%) AF	24-hour Holter	17 (82%) permanent; 3 (18%) paroxysmal
Levey et al ²⁹	The ALFA study (AF general practice in France)	758 AF patients	ECG; 24-hour Holter (if indicated)	11.4% of total population; 16.2% with permanent AF; 7% with recent onset AF; 5.4% with paroxysmal AF
Benjamin et al ³⁰	The Framingham Heart Study (n = 4731)	562 AF	ECG at biannual examination (38-year follow-up)	228 (40%) on routine Framingham examination
Defaye et al ¹²	The AIDA study	617 patients with DDD pacemakers	Holter memory function	By 1 month 58% asymptomatic; 21% newly developed asymptomatic
Page et al ²⁵	Paroxysmal AF/supraventricular tachycardia	8 AF, 14 tachycardia	24-hour Holter; TTM	62.5 events/100 days/patient
Bhandari et al ²⁶	The Flecainide Supraventricular Tachycardia study	69 paroxysmal AF	TTM	AF was present in 112 (10.6%) of 1061 “asymptomatic” calls
Wolk et al ²⁷	Paroxysmal AF treated with propafenone or propranolol	52 AF	24-hour Holter	27% on propafenone; 22% on propranolol
St George’s AF Clinic	131 AF patients	Paroxysmal 12.8%, persistent 71.8%	ECG; 24-hour Holter; questionnaire	29.8% diagnosed incidentally

Newly Diagnosed Atrial Fibrillation and Acute Stroke The Framingham Study

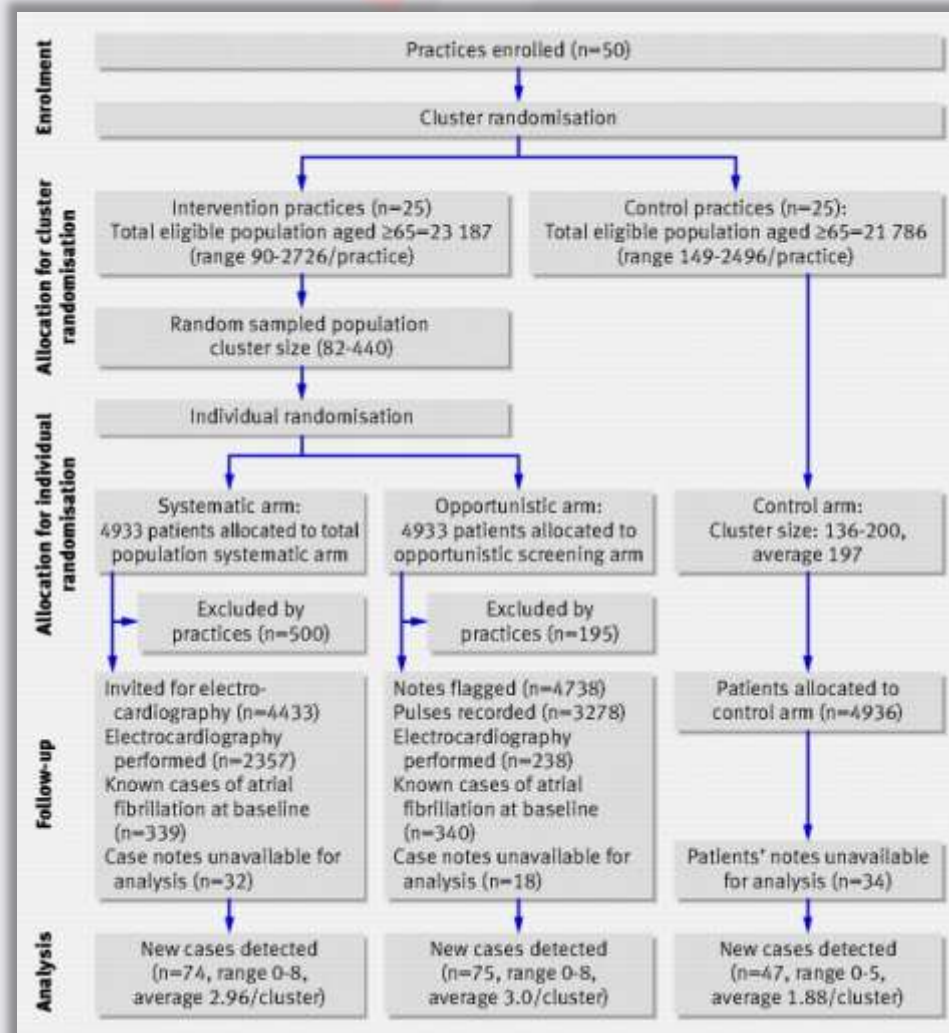
Table 1. Distribution of Sex, Age, and Stroke Subtype in 115 Stroke Subjects Associated With AF

	Prior AF	AF on Admission	AF After Admission
No.	89	21	5
% men	37	48	60
Age range, y (median)	44-97 (75)	63-94 (82)	66-84 (72)
Stroke subtype, ischemic/hemorrhagic	86/3	20/1	5/0

AF indicates atrial fibrillation.

How effective is AF screening and what is the most efficient way?

SAFE study design



Manual pulse palpation

Table 3. The test characteristics of clinical pulse assessment by the nurses in those systematically screened using different thresholds to define an abnormal pulse rhythm. Values are percentages (n = 1099) (95% confidence intervals).

	Threshold of nurse pulse assessment					
	n	Percentage with any irregularity (95% CI)	n	Percentage with frequent or continuous irregularity (95% CI)	n	Percentage with continuous irregularity (95% CI)
Sensitivity	61/67	91 (82–97)	48/67	72 (59–82)	36/67	54 (41–66)
Specificity	767/1032	74 (72–77)	972/1032	94 (93–96)	1009/1032	98 (97–99)
Positive predictive value	61/326	19 (15–23)	48/108	44 (35–54)	36/59	61 (47–73)
Negative predictive value	767/773	99 (98–100)	972/991	98 (97–99)	1009/1040	97 (96–98)
Positive likelihood ratio	–	3.6 (3.1–4.0)	–	12 (9.2–16)	–	24 (15–38)
Negative likelihood ratio	–	0.12 (0.06–0.26)	–	0.30 (0.28–0.32)	–	0.47 (0.36–0.62)

Morgan S, Mant D. *BJGP* 2002; 52: 373 -380

Sudlow M et al. *BMJ* 1998;317:327-328: **93% + sensitivity**

Table 2 | New cases of atrial fibrillation (AF) by trial arm identified in case notes 12 months after baseline

Group	Patients	Baseline AF	Missing notes	Denominator	Newly identified cases	New case detection %
Control	4936	389	34	4513	47	1.04
Intervention:						
Total	9866	679	50	9137	149	1.63
Opportunistic*	4933	340	18	4575	75	1.64
Systematic*	4933	339	32	4562	74	1.62

*Subsets of total intervention population.

Choice of screening mode

- ~~Systematic screening~~
- **Opportunistic screening**
 - Flu clinic
 - Flagging
 - Chronic disease management

Advantages

Disadvantages

Flagging records

Simple
High population coverage
Allows multiple pulse checks

Entire health care team needs to take part

Flu clinic

Simple
Fast

Limited population coverage
One pulse check
Increases stress of flu clinic

Chronic disease template

Simple
Good population coverage

Not everyone uses templates
Limited opportunities for pulse checks

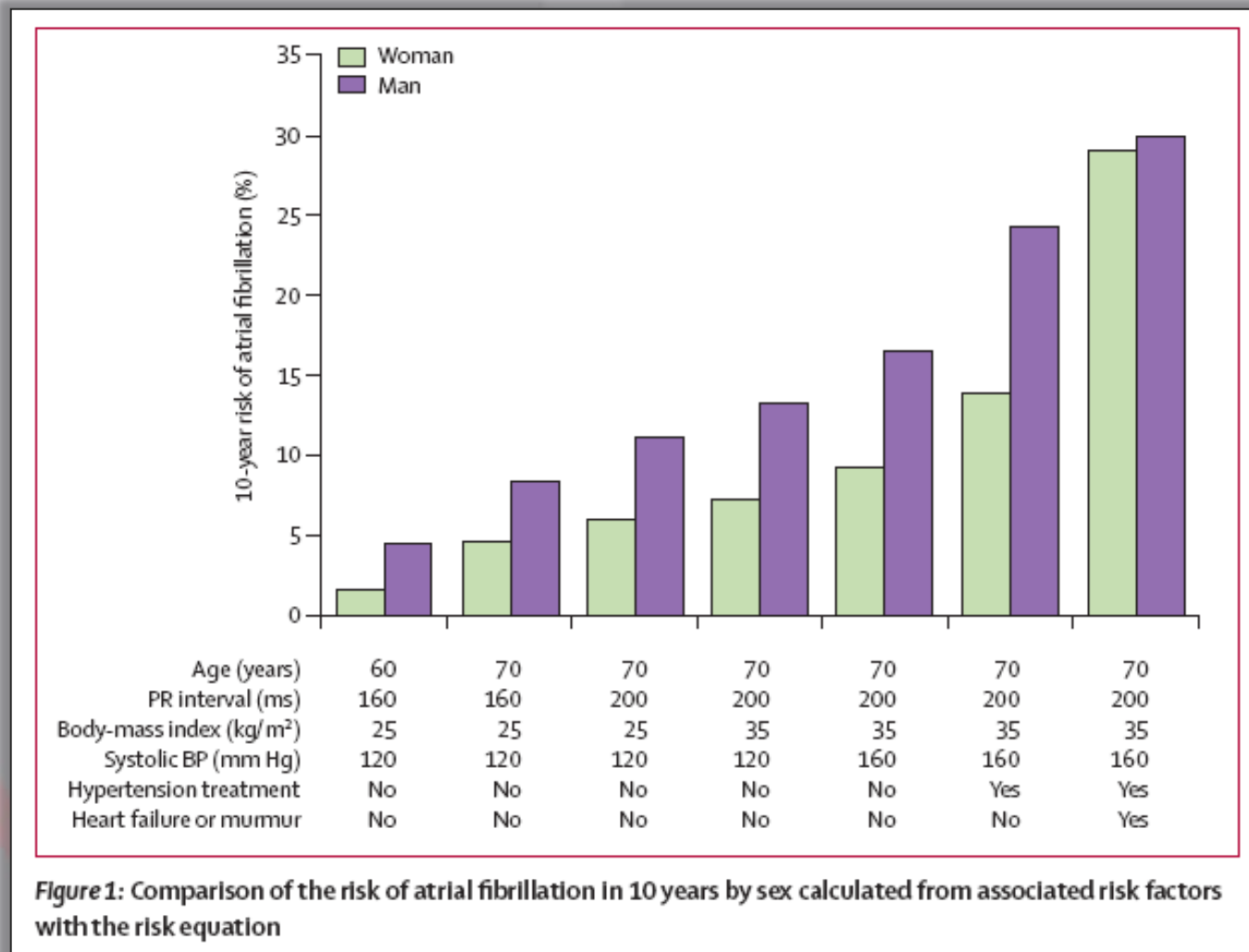
AF screening in 'flu-clinics'

- Annual invitation in autumn
- Target population:
 - Patients aged 65 years +
 - Patients with chronic conditions
- High take up rate
- Dedicated clinics with high turnover

AF screening using chronic disease management templates

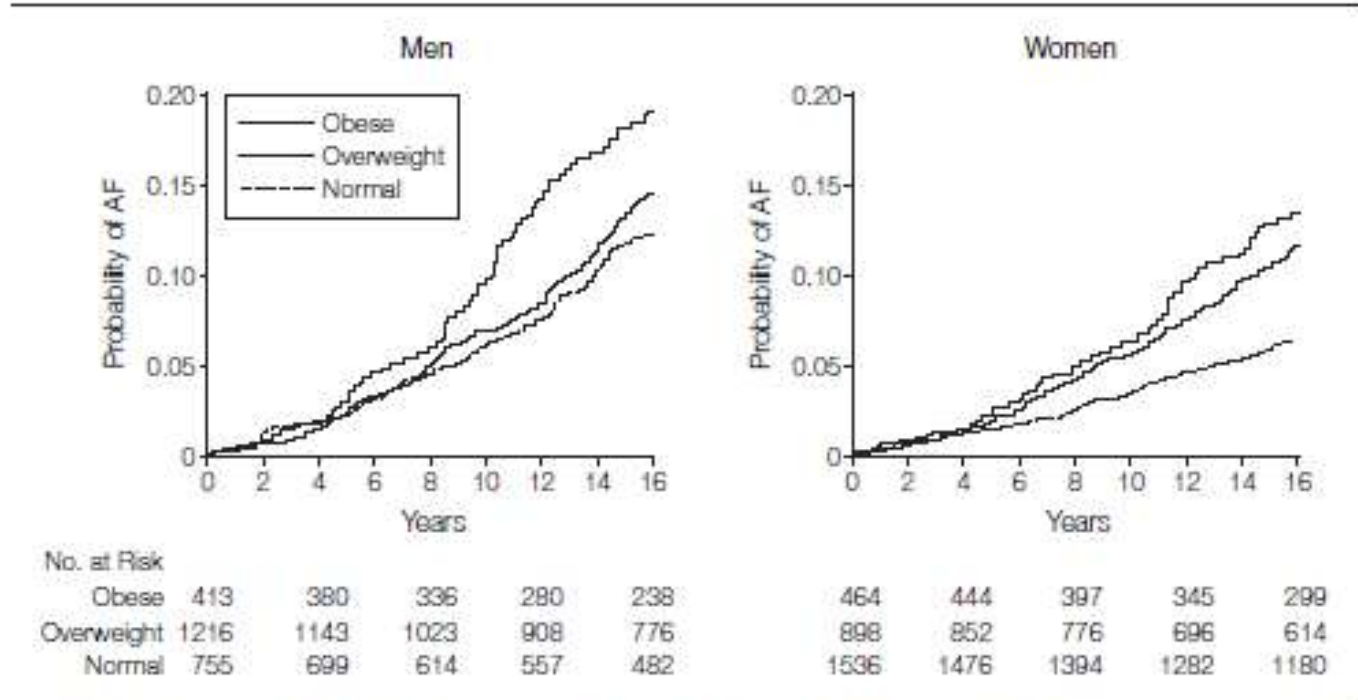
- Known risk factors for atrial fibrillation
- Chronic disease management systems
 - Recall
 - Regular review in dedicated clinic
 - Use of disease management templates
- Lack of pulse check on many templates

Development of a risk score for atrial fibrillation (Framingham Heart Study): a community-based cohort study



Obesity and the Risk of New-Onset Atrial Fibrillation

Figure. Kaplan-Meier Curves Showing Cumulative Hazards of Developing Atrial Fibrillation (AF) in Men and Women, by Baseline Body Mass Index Category



Horizontal axis represents time since the baseline examination. Body mass index categories were as follows: normal, <25.0; overweight, 25.0 to <30.0; and obese, ≥30.0.

Chronic kidney disease and prevalent atrial fibrillation: The Chronic Renal Insufficiency Cohort (CRIC)

Table II. Prevalence of AF by eGFR, age, sex, and race/ethnicity

	N = 3267	AF n (%)	P value
All population	3267	602 (18.4%)	
eGFR (mL/[min 1.73 m ²])			.0010
<45	1795	367 (20.4%)	
≥45	1472	235 (16.0%)	
Age (y)			<.0001
<40	239	19 (7.9%)	
40-49	398	49 (12.3%)	
50-59	958	162 (16.9%)	
60-69	1217	256 (21.0%)	
≥70	455	116 (25.5%)	
Sex			.7807
Male	1775	324 (18.3%)	
Female	1492	278 (18.6%)	
Race/ethnicity			.0156
Non-Hispanic white	1627	273 (16.8%)	
Non-Hispanic black	1640	329 (20.1%)	

AF screening in chronic disease management / health promotion

✓ Hypertension

✓ Heart failure

✓ CHD

✓ Stroke

✓ Diabetes

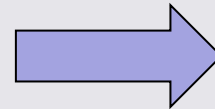
✓ CKD

✓ Over 75 checks

✓ COPD

✓ Weight management

✓ NHS Health Check



**> 90% target
population
coverage**

FYI: Remittance Advice - Message (HTML)

LV for Windows (C) 2001 EMIS

File Edit View Macros Settings Favourites Help

Modules

nGMS Registers : 0 Alerts: 0 EDI: 0 PN: 27 Email: 0 Repeats Req: 0

No.23899. Mr Bishopgate Test, Bishopgate House 178 Newgate StreAge 36 years BISH

Template For Template Gms - Diabetes Mellit. (V16)

Prompt	Result	Date	Last Recorded Entry
DATE DIAGNOSED			DATE DIAGNOSED -----
*Diabet.resolved			*Diabet.resolved -----
Annual review			Annual review -----
Treatment mode			Treatment mode -----
Diabetes: practi			Diabetes: practi -----
O/E - height			178 cm 1.4.2009
O/E - weight			79 Kg 1.4.2009
*Body Mass Index			24.9 1.4.2009
O/E - pulse rate			60 /minute 26.11.2009
O/E - pulse rhyt			Irregular 26.11.2009

B
D
E
F Flu 2006
G
H
I
J
K
L
M
N
O
P
R swine flu
T
U
V
W
X
Y
Z

Enter
Yes No

Network link CAP NUM Thu 16 Sep 2010 09:51 PJ-Mr P Jackson PDS-4.2 WS-N Line-536 Job-85 Tv-3

Start Inbox - Micros... HPV given at B... FYI: Remittanc... Network Viewe... LV5.2 Clinical 09:51

Whinfield Surgery AF screening by flagging records

Consultation Summary Guidelines Add List View Window Help

Patient Documents Workflow Intry

Copy of Copy of Initial View 4

Initial Filter

- 1 Problems
- 105 Consultation
- Drug Allergies & Adverse F
- 12 Recalls and Reviews
- Patient Preference
- 64 Medical History
- 33 Therapy
- 38 Lifestyle
- 40 Examination Findings
- 10 Immunisations
- 11 Miscellaneous
- 63 All Test Results
- New Registration Exam
- Well Person Clinic
- HP Interventions
- 84 Elderly
- Disease Registers
- Asthma
- Diabetes
- CV or Hypertension

Allergy Status not recorded

- Add Allergy
- Add No Allergy

Health promotion

- Clinical information missing

Current Recalls

Immunisations Due in Ne...

- Polio myelitis 1st 13/06/1925 o/d
- Tetanus 1st 13/06/1925 o/d

GMS13 Problems FLU

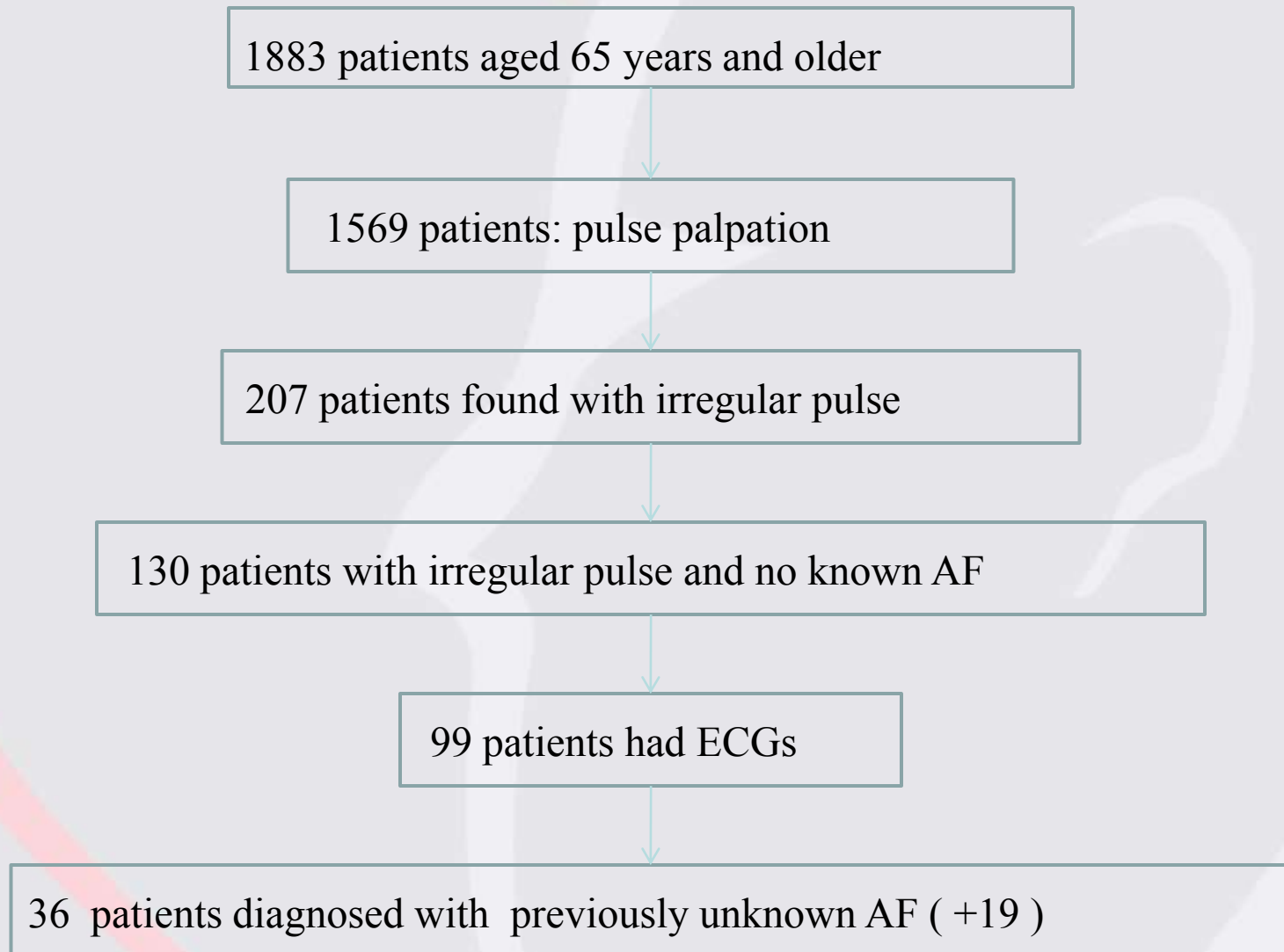
Appointments Patient Select Patient Details Consultations Journal Filtered List Summary

Date	Description		
26/05/09	Sample sent to lab. for test fbc.esr.rbs.lft.u&e. (AW)		
	H _s Abdominal pain almost one week of upper abd pain rad. to back. Slight nausea. Reg bowel mot o.e RUQ tenderness, mild, no guarding or rebound, no mass, not jaundiced T 36.0 p84 prob. GB, get bloods and U/S, counselled about alarm sympt.		
	LACTULOSE soln 3.1-3.7g/5ml Supply (500) mls 15ML TWICE DAILY		
	CODEINE PHOSPHATE tabs 15mg Supply (28) tablet(s) TAKE ONE 4 TIMES/DAY WHEN REQUIRED		
	CEFALEXIN caps 500mg Supply (15) capsule(s) TAKE ONE CAPSULE THREE TIMES A DAY		
07/10/08	AGRIPPAL vaccine Supply (1) 0.5ml pre-filled syringe AS DIRECTED		JB
	FLU Stage: 0 Given Routine Measure Due: 07/10/2009 consent no ci se discussed admin via pgd		MT
23/09/08	H _i Dressing of wound almost healed scab now come away rev 1 week or sos	4	SON
16/09/08	H _i Dressing of wound scab loosening but not ready for lifting. redressed primapore -review 1wk	4	AG
09/09/08	H _i Dressing of wound virtually healed small pin prick in middle of thick scab dry dressing applied she will change Friday rev Tues pt has dressings	4	SON
02/09/08	H _i Dressing of wound almost healed small open area in middle of wound redressed with Mepitel and pad rev 1 week or sos	4	
26/08/08	H _i Dressing of wound continues to heal redressed as before rev 1 week or sos as Mepitel can be left for 1 week and wound progressing well	4	
	Mepitel soft silicone wound dressing 8cm x 10cm [MOLNLYCKE] Supply (5) dressing(s)		JB
22/08/08	H _i Dressing of wound slow healing continues cleaned and redressed with Mepitel and pad rev Tues or sos	4	SON
19/08/08	H _i Dressing of wound redressed with mepitel, reports improving, has f/up appts	4	AG
15/08/08	H _i Dressing of wound wound continues to heal well, much improved since I last saw it. Reminder of scab from top wound removed. Scab around the existing wound lifting, but left in tact. Redressed with mepitel, pad and tubifast.	3	ANNA
12/08/08	H _i Dressing of wound slow healing continues wound shallower and smaller cleaned and redressed with Mepitel and pad rev Fri or sos	4	SON
08/08/08	H _i Dressing of wound redressed with Mepitel and pad rev Tues or sos	4	
05/08/08	H _i Dressing of wound slow healing continues redressed with mepitel and pad rev Fri	4	
	E45 crm Supply (500) g pump APPLY AS NEEDED		JB
01/08/08	H _i Dressing of wound continues to improve redressed with Mepitel and pad rev ITues or sos	4	SON
	Dressit sterile dress pk med/lge glo [RICHARDSON] Supply (10) pack		JB
	Tubifast blue line elast viscosc stock 7.5cm [MOLNLYCKE] Supply (1) 3 metre pack(s)		
	Mepitel soft silicone wound dressing 8cm x 10cm [MOLNLYCKE] Supply (5) dressing(s)		
29/07/08	H _i Dressing of wound slow healing continues redressed with Mepitel and pad rev Fri or sos	4	SON

1. 286799

2. Record #243.11 irregular pulse or #2431.1 regular pulse

Opportunistic computer prompted screening 5/08 – 5/09



Key Facts

- 83.3% screened opportunistically
- 13% with irregular pulse
- 6.3% had ECGs
- 36% had AF on ECG
- Number needed to screen 43
- Change in prevalence 1.32 -> 1.82%
- AF / 65yr + ratio: 9.1%

Pitfalls

- Sell it to the entire team:
 - Preventing strokes and saving lives
 - It pays (removal of square root formula, incentive schemes)
 - QIPP, budgets etc....
- Pulse palpation – observer bias :
 - 20s minimum
 - Any irregularity -> ECG
- If they don't come, go and find them ->
- ECG:
 - Equipment / operator
 - Interpretation skills



How good is Primary Care in diagnosing AF on an ECG?

Accuracy of diagnosing atrial fibrillation on electrocardiogram by primary care practitioners and interpretative diagnostic software

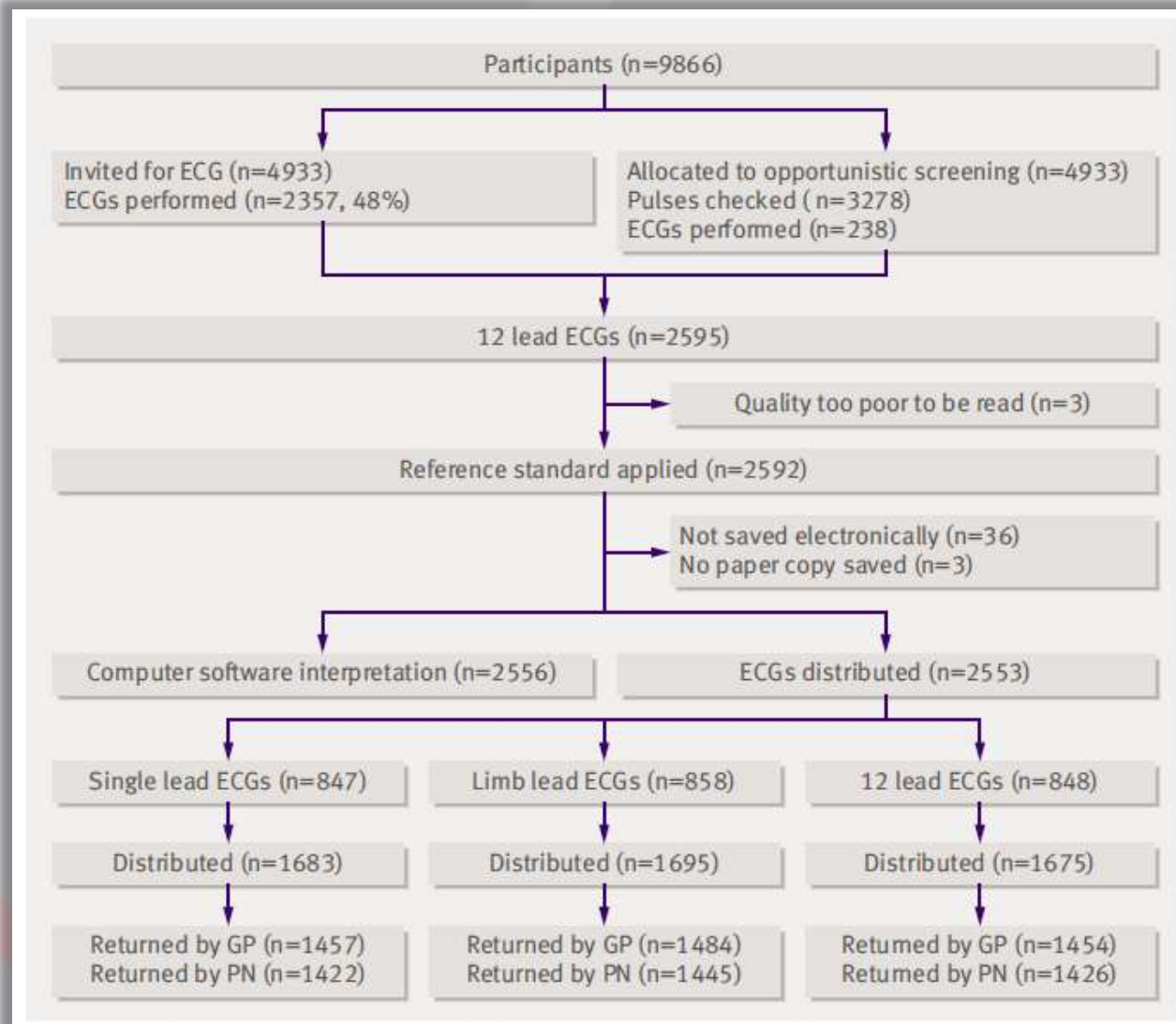


Table 4 | Summary statistics of accuracy of interpretation of electrocardiograms by reader and type

Reader and electrocardiogram type	Sensitivity (95% CI)	Specificity (95% CI)
Interpretative software:		
12 lead	83.3 (78.3 to 88.2)	99.1 (98.7 to 99.5)
General practitioner:		
12 lead	79.8 (70.5 to 87.2)	91.6 (90.1 to 93.1)
Limb lead	82.5 (74.8 to 88.7)	88.5 (86.9 to 90.2)
Chest lead	84.8 (78.7 to 91.0)	86.4 (84.6 to 88.3)
Practice nurse:		
12 lead	77.1 (67.4 to 85.0)	85.1 (83.0 to 86.9)
Limb lead	72.0 (63.9 to 80.1)	83.4 (81.4 to 85.4)
Chest lead	68.7 (60.1 to 76.4)	82.8 (80.7 to 84.8)
General practitioner and interpretative software*:		
12 lead	91.9 (86.6 to 97.3)	91.1 (89.6 to 92.6)

For the purposes of calculations for this table, "uncertain" diagnoses are counted as missed diagnoses for sensitivity and as not atrial fibrillation for specificity (see tables 1-3).

*Defined as positive result if either (or both) is positive.

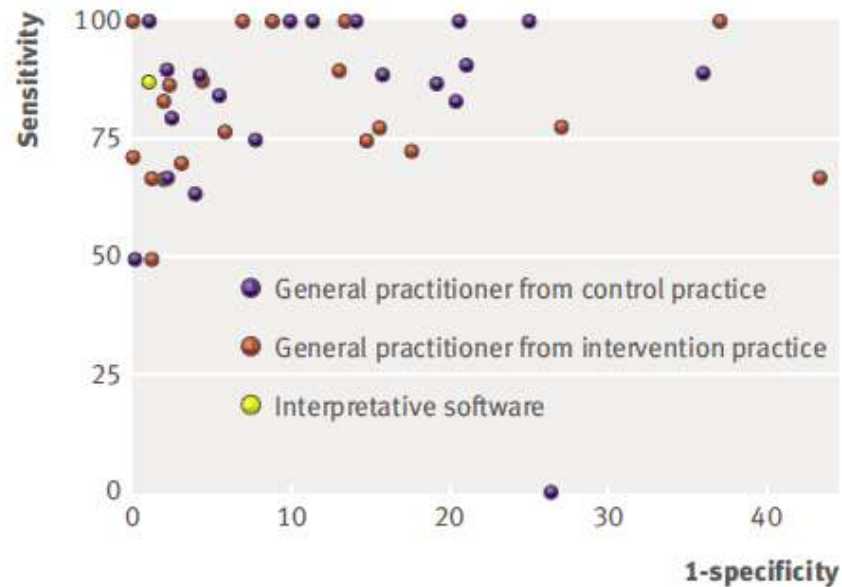
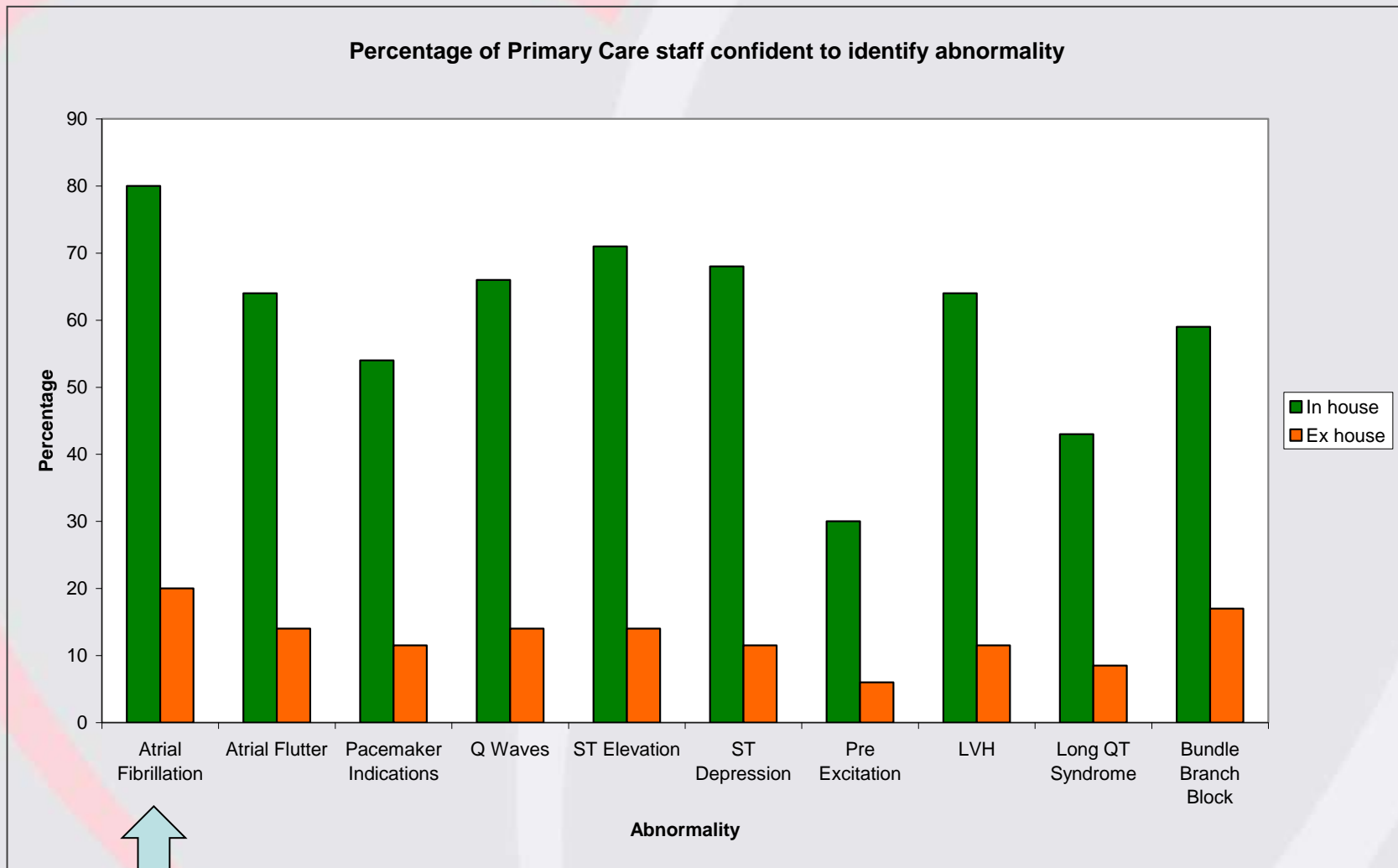


Fig 2 | Accuracy of diagnosis of atrial fibrillation by 42 general practitioners

ECG provision in the North-East of England: a primary care based ECG survey*



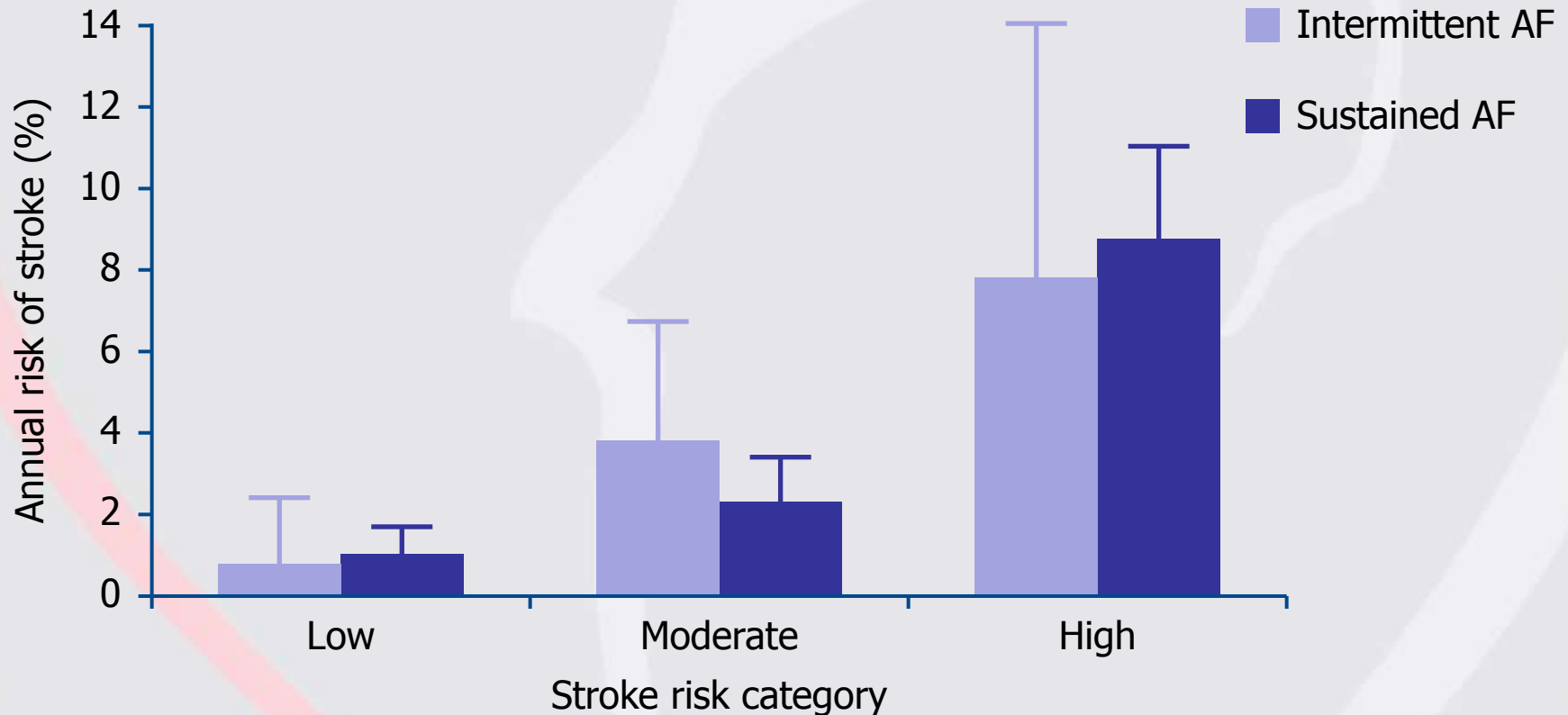
*awaiting publication

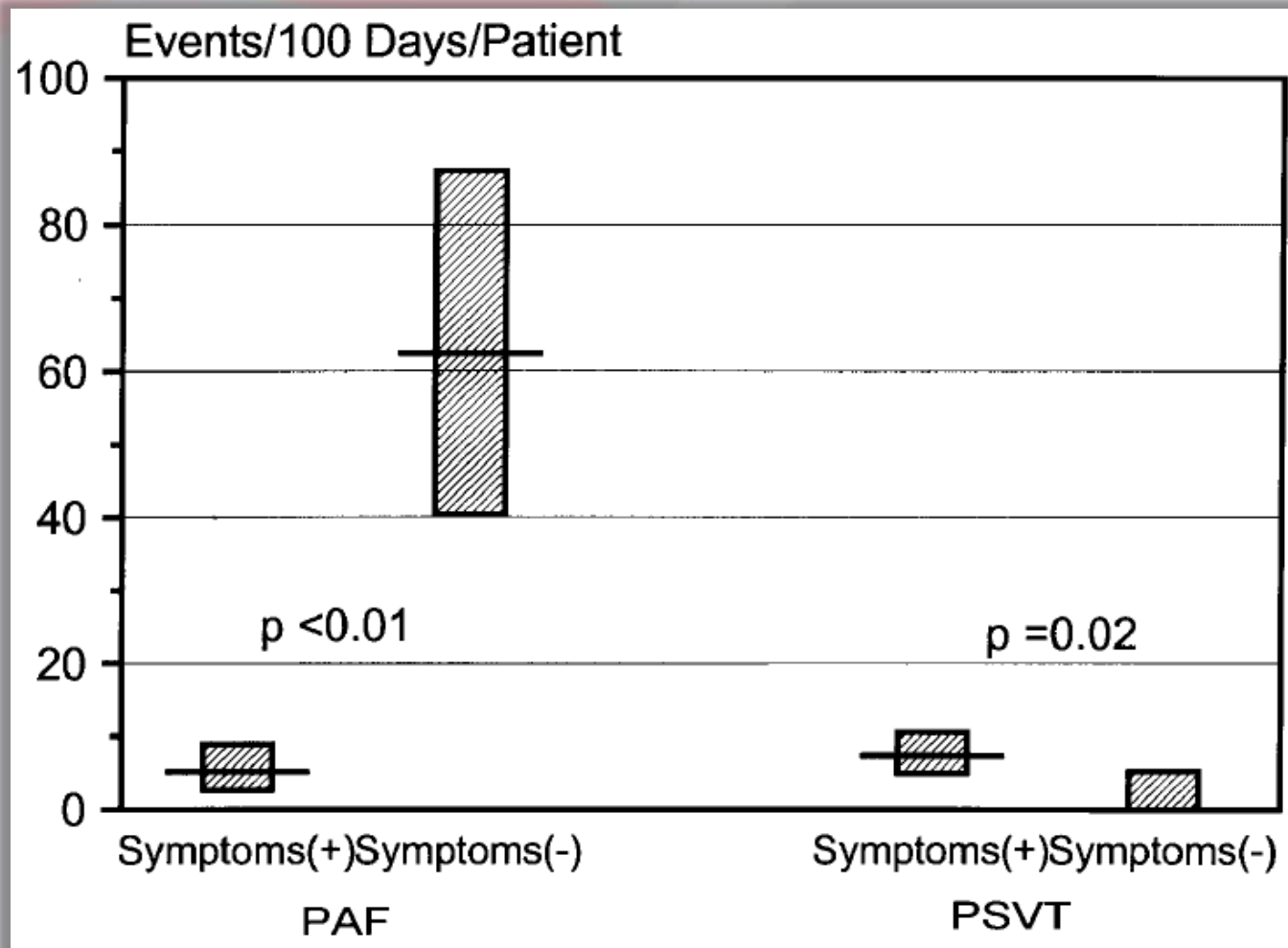
Secondary screening

Stroke risk persists even in asymptomatic/paroxysmal AF

The risk of stroke with asymptomatic or paroxysmal AF is comparable to that with permanent AF^{1,2}

Observed rate of ischaemic stroke¹





Plots of mean rates of arrhythmia events. Sustained asymptomatic arrhythmia events were significantly ($P < .01$) more frequent than symptomatic arrhythmia events in the group of patients with paroxysmal atrial fibrillation (PAF, left).

Detecting Paroxysmal Atrial Fibrillation After Ischemic Stroke and Transient Ischemic Attack: If You Don't Look, You Won't Find

David J. Gladstone, John Blakely, Paul Dorian, Melanie Spring, Jiming Fang, Frank L. Silver, Moira K. Kapral and for the EMBRACE Pilot Study Group
Stroke 2008;39:e78-e79; originally published online Apr 3, 2008;

Table 3. Study Results

Study, Year	N	Intervention	Duration of Monitoring	Definition of Atrial Fibrillation	New Atrial Fibrillation/Flutter	Initiation of Monitoring
Barthelemy et al, 2003	60	Cardiac event recorder (n*=52)	4 days (70.1 hours)	≥30 seconds	7.7%	10 days from stroke event
		Holter monitor (n=55)	24 hours		5.5%	Admission to neurology ward
Jabaudon et al, 2004	149	Holter monitor (n=139)	21 hours	Not stated	5.0%	8 days after admission
		Event loop recorder (n=88)	159 hours	AF detected by manual review	5.7%	55 days after admission
Hornig et al, 1996	261	Holter monitor (n=261)	24 hours	Not stated; evaluated by cardiologist	3.8%	ND
Rem et al, 1985	184	Continuous cardiac monitoring (n=159)	48 hours	Not stated; evaluated by neurology resident	2.5%	ND
		Holter monitor (n=51)	24–48 hours		3.9%	ND
Schuchert et al, 1999	82	Holter monitor (n=82)	72 hours	At least 1 minute	6.1%	2–3 weeks after acute stroke

*n values indicate subjects without atrial fibrillation/flutter on history or previously.
ND indicates no data.

4.6% PAF yield of rhythm monitoring post stroke

Intensive cardiac monitoring after transient ischaemic attack identifies significant numbers of previously unknown paroxysmal atrial fibrillation.

Kar A, Ragavan S, Brown S, Ellis A,
Guyler P, O' Brien A

Southend-On-Sea, United Kingdom



XVIII European Stroke Conference, 26-29 May 2009 Stockholm,

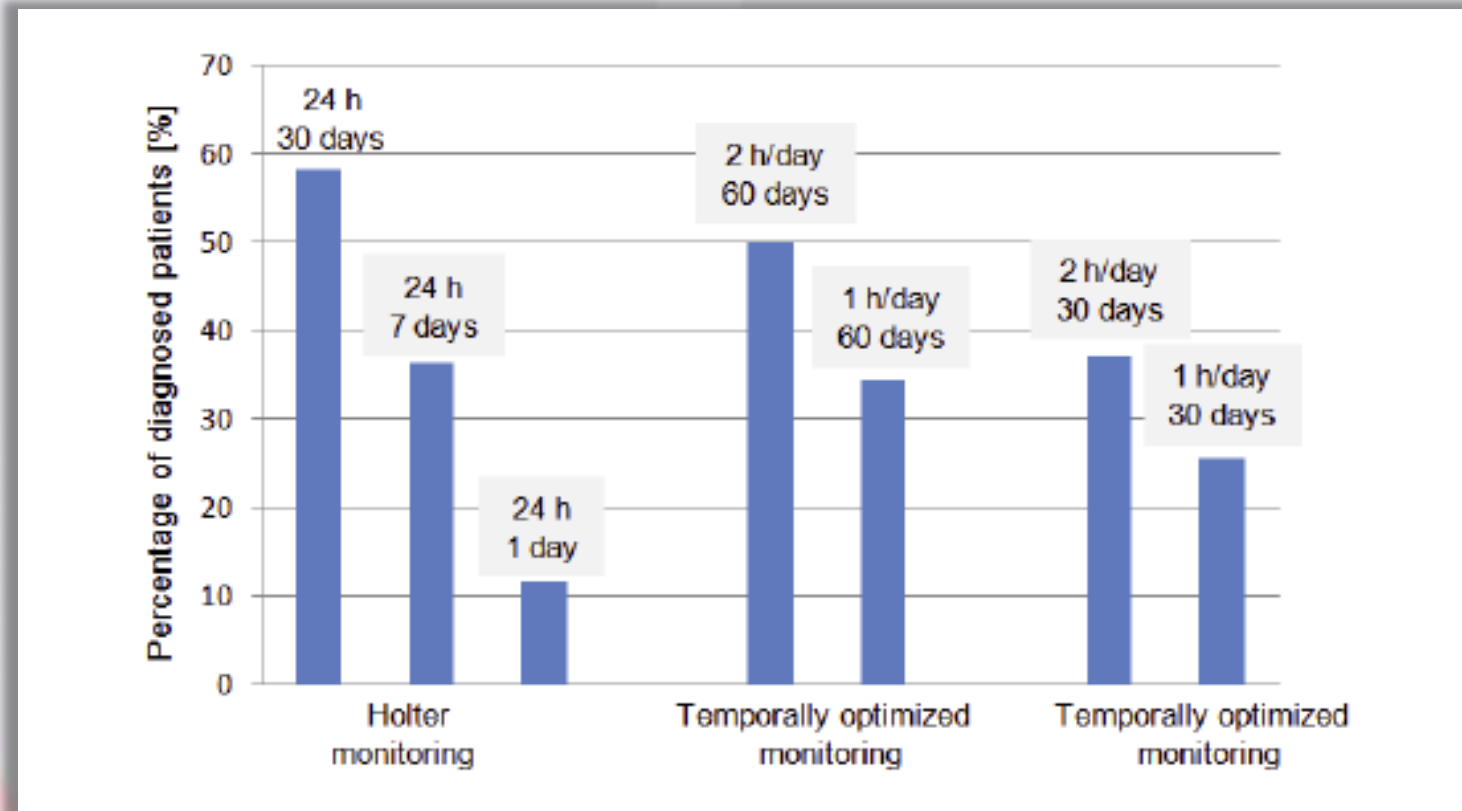


EUROPEAN STROKE NETWORK

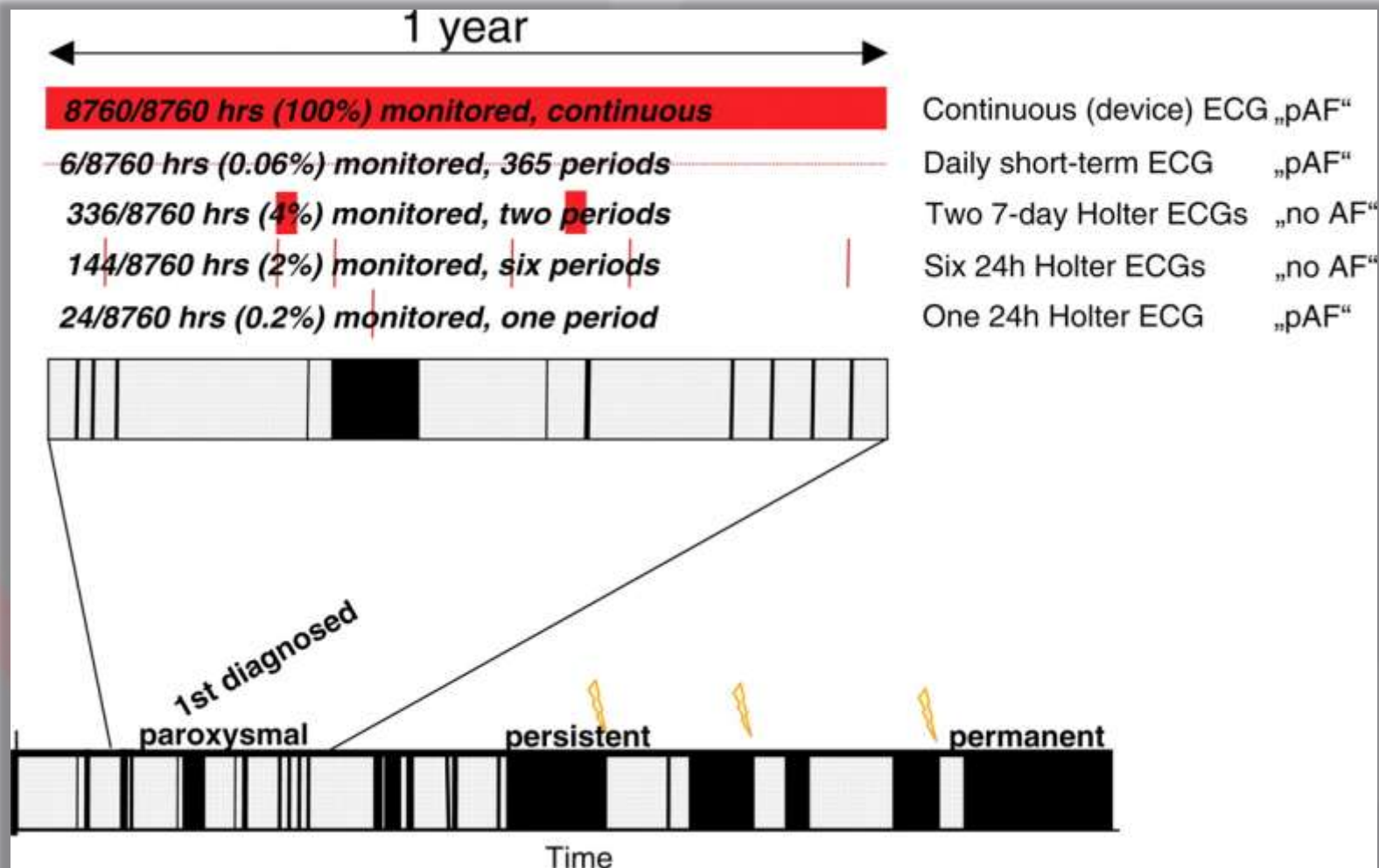
Discussion

This intensive cardiac rhythm monitoring strategy after TIA identifies a significant proportion of patients with previously unknown AF or PAF in our population (25/95 = 26.3%). Moreover, the yield for 72 hour cardiac monitoring is higher than previously reported (17/72 = 23.6%). This high level of AF and PAF detection may be a reflection of our relatively elderly population. The identification of AF and PAF led to high rates of anticoagulation prescribing.

Simulation of monitoring strategies for atrial fibrillation detection



Efficacy of detecting paroxysmal atrial fibrillation (AF) and of assessing AF burden using a standard 24 h Holter ECG, two 7 day Holter ECGs, telemetric short-term ECG, and continuous (e.g.



What if large artery stroke and intracranial / extracranial vessels normal?

- Anticoagulate if >30 sec AF run on monitor?
- Anticoagulate if <30 sec AF run on monitor?
- Just anticoagulate?
- Other? (TOE?)

The Relationship Between Daily Atrial Tachyarrhythmia Burden From Implantable Device Diagnostics and Stroke Risk

The TRENDS Study

Table 3. Hazard Ratios for Thromboembolic Events Associated With AT/AF Burden Adjusted for Stroke Risk Factors and Antithrombotic Therapy

Category	Variable	Hazard Ratio (95% CI)*	P Value
AT/AF burden	Low burden vs zero burden	0.98 (0.34, 2.82)	0.97
	High burden vs zero burden	2.20 (0.96, 5.05)	0.06

High and low burden are separated by the median value of 30-day windows having nonzero AT/AF burden; that is, high corresponds to a burden of ≥ 5.5 hours, low corresponds to a burden of 20 seconds to < 5.5 hours.

*Estimates based on Cox model with time-varying AT/AF burden and antithrombotic therapy.

Detection of short bursts of PAF correlates with the number of brain lesions on CT

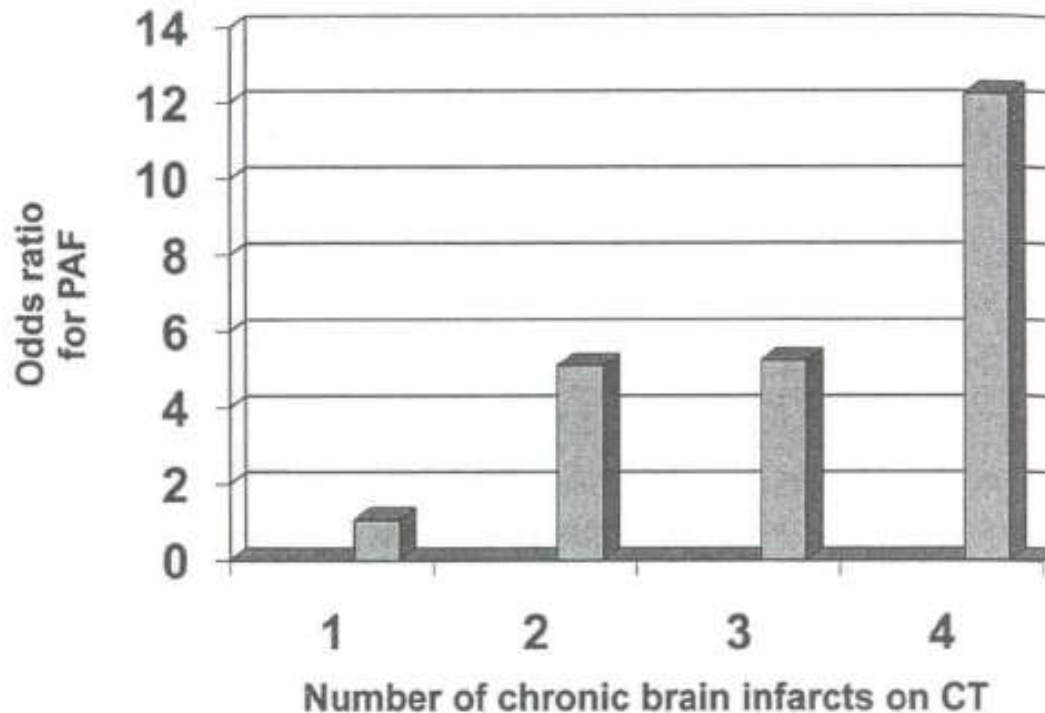


Figure. Results of dummy variable regression showing that increasing numbers of chronic brain lesions on CT are associated with the presence of brief bursts of paroxysmal atrial fibrillation on Holter monitor. The probability values for the odds ratios are as follows: 1 infarct vs 0 infarcts, $P=0.9407$; 2 infarcts vs 0 infarcts, $P=0.0043$; 3 infarcts vs 0 infarcts, $P=0.0213$; and 4 infarcts vs 0 infarcts, $P=0.0142$.

Performance of a New Leadless Implantable Cardiac Monitor in Detecting and Quantifying Atrial Fibrillation Results of the XPECT Trial

Gerhard Hindricks, MD, PhD; Evgueny Pokushalov, MD; Lubos Urban, MD;
Milos Taborsky, MD, PhD; Karl-Heinz Kuck, MD, PhD; Dmitry Lebedev, MD, PhD;
Guido Rieger, MD; Helmut Pürerfellner, MD; on behalf of the XPECT Trial Investigators

Conclusion

- Current QOF AF prevalence underestimates the true prevalence.
- Mode of primary screening is irrelevant.
Population coverage counts!
- Requires little resource and training
- It really works and is cost effective
- Enough evidence to propose introduction of secondary screening into routine clinical care
- Relationship of AF burden and stroke risk still unclear

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Thank you

Questions?

Andreas.Wolff@nhs.net