



Detection & Diagnosis of Atrial Fibrillation in Primary Care

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AF....

- Most common cardiac arrhythmia
- Major risk factor of stroke:
 - ✓ Annual incidence 5-6 times greater in patients with AF
 - ✓ Responsible for about 45% of all embolic strokes
 - ✓ Ischaemic strokes associated with AF often fatal
- Terrible consequences of AF-related stroke:
 - ✓ From a "silent" condition to a disabling condition
 - ✓ High morbidity /mortality (X2/other causes of stroke)
 - ✓ Higher risk of recurrence than for other causes of stroke
 - ✓ Cost of care X1.5




- Stroke risk is preventable:

- ✓ Warfarin reduces risk of stroke:
 - 68% in primary prevention
 - 62% in secondary prevention
- ✓ Under-used:
 - 53% of males / 40% of females with AF were receiving oral anticoagulants (in 2003)
 - 20% to 40% people with AF who are eligible are not receiving anticoagulation!
- ✓ NNT prevent 1 stroke 37
- ✓ 4,500 strokes/year
- ✓ 3,000 deaths/year through improved services / optimal therapy could be prevented

DeWilde S, Carey IM, Emmas C et al. (2006) [Trends in the prevalence of diagnosed atrial fibrillation, its treatment with anticoagulation and predictors of such treatment in UK primary care](#). Heart 92: 1064-1070.

Ruigomez A, Johansson S, Wallander MA et al. (2002) [Incidence of chronic atrial fibrillation in general practice and its treatment pattern](#). Journal of Clinical Epidemiology 55: 358-363.

Batty GM, Grant RL, Aggarwal R et al. (2003) [Using prescribing indicators to measure the quality of prescribing to elderly medical in-patients](#). Age and Ageing 32: 292-298.

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- But... AF is often asymptomatic
 - 69% in euro heart survey
 - unless, screened or diagnosed at time of complication / hospital admission.
 - Prevalence: an aged-related condition:
 - 1 to 2 % of total UK population
 - 5% over 65 year-old
 - 10% over 80 year-old
 - True prevalence certainly much higher, >2% of total population
 - plus with an ageing population: new “epidemic”

The prevalence problem....

- DeWilde et al.:
 - Trend 1993 > 2003 of diagnosed AF
 - Data from 131 general practices (about 1 million reg. pats. annually)
 - Estimated 2003 prevalence of active/ever diagnosed AF:
 - ✓ 1.31% and 1.49% respectively in men,
 - ✓ 1.15% and 1.29% respectively in women
 - ✓ aged >85 years:13.2% in men and 11% in women.
- 2007/2008 QOF data national prevalence of diagnosed AF is 1.30%

.... are we doing well?

2006/07 QOF data – raw (unadjusted) figures.

PCT	Prevalence	Low CI	High CI
London	0.8	0.79	0.8
Bromley	1.36	1.32	1.4
Greenwich	0.8	0.76	0.83
Lambeth	0.53	0.51	0.56
Lewisham	0.56	0.54	0.59
Southwark	0.56	0.54	0.59



- Lambeth Data Combined Model (Oct 08-Sept 09)

- Based on registered population / QOF AF registers
- Unadjusted prevalence:
 - ✓ Total prevalence: 0.56%
 - ✓ 66-75 year-old: 3.37%
 - ✓ Over 76 year-old: 8.92%
- Large variations between practices:
 - ✓ Total prevalence: 0.15 to 1.25%
 - ✓ 66-75 year-old: 0 to 9.3%
 - ✓ Over 76 year-old: 3.75 to 20.58%

Detection of AF?

1- Symptoms:


- ✓ Breathlessness / dyspnoea:
 - De novo
 - **Deterioration with pre-existing condition**: e.g. HF, COPD.... (loss of Atrial “kick”)
- ✓ Palpitations
- ✓ Chest discomfort
- ✓ Syncope / dizziness
- ✓ Stroke / TIA
- ✓ Heart Failure

2- Screening:

- ✓ Opportunistic
- ✓ Systematic

Screening: some evidences...

- Opportunistic Pulse check in Durham¹:
 - ✓ 1,883 patients over 65 (practice population of 11,423)
 - ✓ 1,569 pulses checked, 207 irregular pulses out of which 130 patients no known AF
 - ✓ 99 had an ECG
 - ✓ 39 newly diagnosed cases of AF (detection rate of 2.48%)
 - ✓ Prevalence:
 - from 1.32% to 1.82%
 - In over 65 > 10.9%

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- Opportunistic screening in North-East Essex:
 - ✓ 37 practices signed-up LES
 - ✓ 43,210 patients screened in 6 weeks at **flu clinics**
 - ✓ Outcomes:
 - 3,154 patients with irregular pulse (9.2%);
 - 189 patients AF (0.55%);
 - 342 patients other arrhythmias
 - 77 patients CHADS2 stratified as being at risk for stroke and started on Warfarin
 - ✓ Cost:
 - Overall cost: £68,402
 - Screening costs: £2 per patient
 - Cost per diagnosis: £362
 - ✓ **Savings:**
 - 5 strokes prevented during the next year at £44,000 each (based on a 5% incidence of stroke in patients with AF and 50% reduction with Warfarin)
 - Annual cost saving (recurrent): £220,000
 - Return on investment: 322%

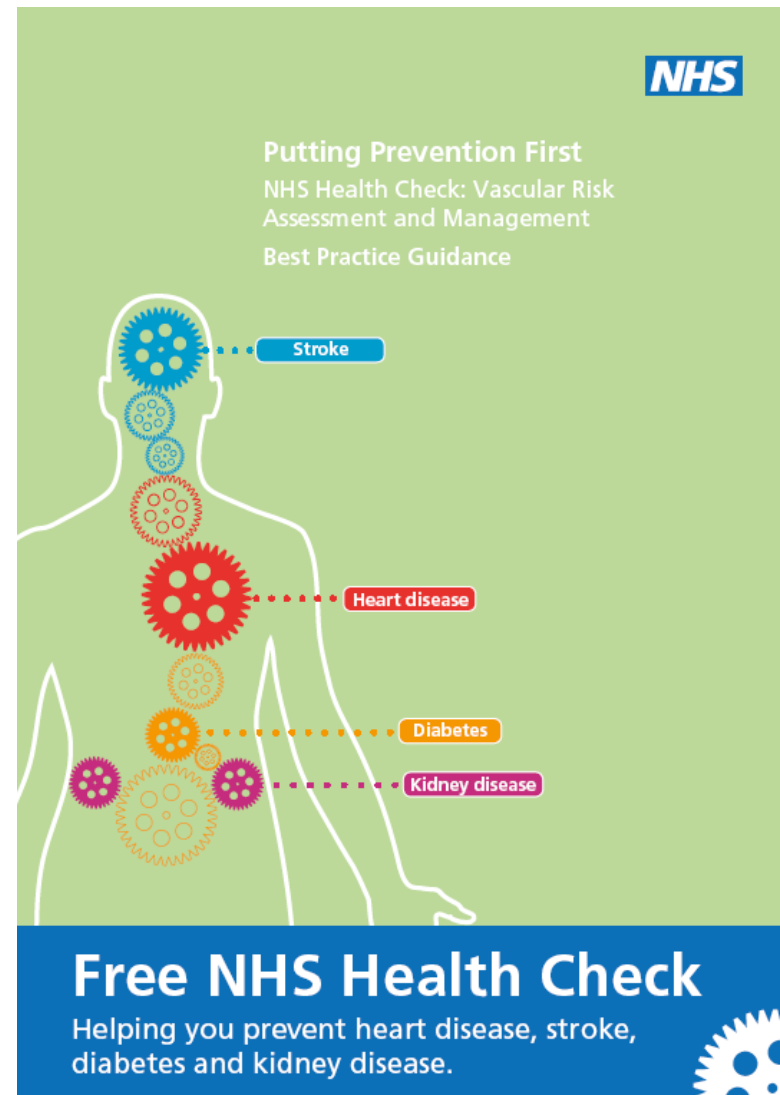


- **Best opportunistic screening opportunities:**

- Flu clinic
- Medication review
- **Elderly population**
- Chronic illness monitoring: **important co-morbidity**
 - ✓ Diabetes: 20% of AF have diabetes!
 - ✓ Hypertension
 - ✓ IHD
 - ✓ HF: up to 30-40% of patients with HF
 - ✓ Valvular Heart Disease (LA distension, early in MR/MS but late in Ao disease)
 - ✓ COPD
 - ✓ CKD
- Other associated co-morbidities:
 - ✓ Thyroid dysfunction
 - ✓ Sleep apnoea

✓ **AND new NHS health check programme !**

- Every 5 years
- All patients aged between 40 and 74 years
- exclude patients with known hypertension, ischemic heart disease, stroke, diabetes and chronic kidney disease
- universal risk assessment and management programme



The poster features a white silhouette of a human figure against a light green background. Inside the silhouette, several colorful gears of different sizes and colors (blue, red, orange, purple) are arranged vertically, representing internal health risks. Dotted lines connect these gears to labels on the right: a blue gear for 'Stroke', a red gear for 'Heart disease', an orange gear for 'Diabetes', and a purple gear for 'Kidney disease'. The NHS logo is in the top right corner. The bottom section has a dark blue background with white text.

NHS

Putting Prevention First
NHS Health Check: Vascular Risk
Assessment and Management
Best Practice Guidance

Stroke

Heart disease

Diabetes

Kidney disease

Free NHS Health Check
Helping you prevent heart disease, stroke,
diabetes and kidney disease.

Pulse palpation....

- Quick, simple and reliable
- High sensitivity, 95% (unlikely to miss an individual with AF)
- Moderate specificity, 75% (could misclassify an individual who does not have AF as having AF)
- Low Positive Predictive Value, 8-23%
- Taking pulse for a period of 20 seconds increases specificity (98%) but reduces sensitivity (50%)


Dewar, R.I., Lip, G.Y.H et al. (2007), Identification, diagnosis and assessment of atrial fibrillation, Heart, 93, pp.25-28.

Cooke, G., Doust, J, & Sanders, S. (2006), is pulse palpation helpful in detecting atrial fibrillation? A systematic review, The journal of family practice, 55 (2), pp. 130-134.

The tricky ECG !

- **Irregular pulse should ALWAYS raise the possibility of AF but ECG is essential to establish the diagnostic**
- But highly dependant on interpretation!
- Mant et Al. (2007)¹
 - ✓ SAFE study, 49 practices, 2595 patients/ECGs, compared 49 GPs – 49 nurses – ECG interpretative software, consultants cardiologist as gold standard,

¹ Mant, J., Fitzmaurice, D.A. et al. (2007) Accuracy of diagnosing atrial fibrillation on electrocardiogram by primary care practitioners and interpretative diagnostic software: analysis of data from screening for atrial fibrillation in the elderly (SAFE) trial, *BMJ*, 335(7616).

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- ✓ GPs:
 - detected 79/99 cases of AF (sensitivity 80%, 95% CI 71-87%)
 - misinterpreted 114/1355 cases of SR (specificity 92%, 95% CI 90-93%)
 - Low PPV: 40.9% , so more likely to be wrong...
 - ✓ PNs:
 - Similar sensitivity 77% (CI 67-85%)
 - Lower specificity (85%, CI 83-87%)
 - ✓ Software:
 - Similar sensitivity 83% > so still missed cases!!!
 - No rhythm diagnosis in 4.3% (109)
 - Missed 12% (26) of AF or 17% (36) if inclusion of no rhythm
 - Higher specificity 99% > more accurate.
 - ✓ GPs + Software: 92% sensitivity & 91% specificity
 - ✓ **Conclusion: "many PCP cannot accurately detect AF on an ECG and interpretative software is not sufficient to circumvent this problem"**



- AF criteria:

- ✓ Irregularly irregular rhythm

- ✓ P wave:

- **No distinct P waves, wavy baseline**

- Sometime or in some leads: "fine" or "f" waves <1mm, "coarse" or "F" waves > 1mm

- If seen atrial rate >350ppm

- ✓ PR interval: not measurable

- ✓ QRS:

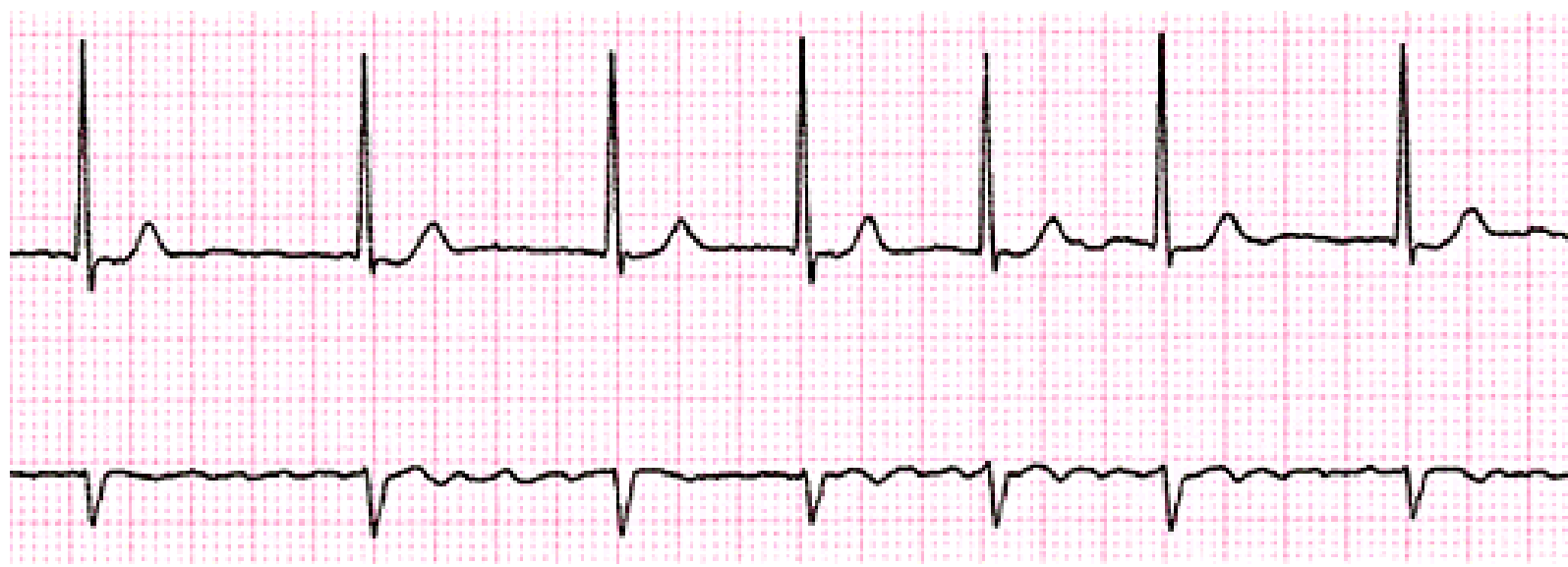
- **irregularly irregular RR interval** (refractory period of AV node)

- Normal shape unless intra-ventricular conduction problem or added ectopics

- Variable ventricular response:

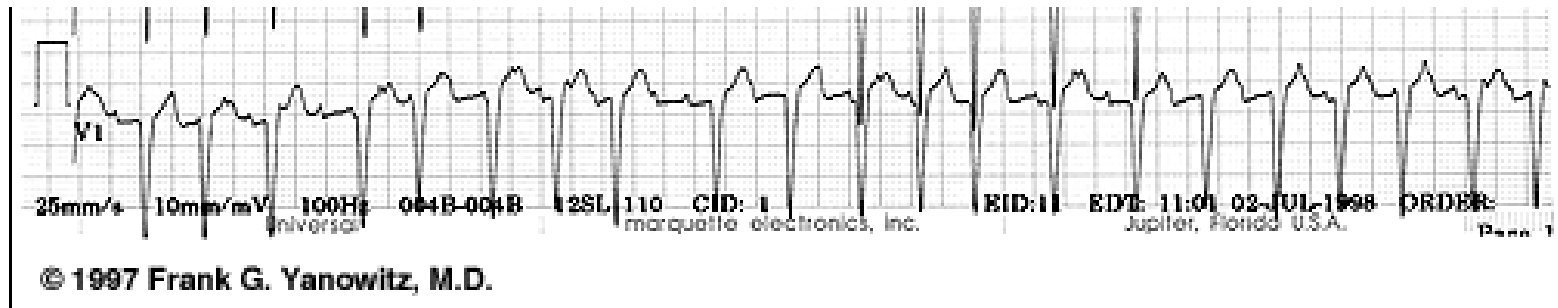
- Slow <60

- Fast 100



ECG differential diagnosis...

- Mainly supraventricular arrhythmias
 - Atrial tachycardia
 - Atrial flutter
 - Atrial ectopics : e.g. Multifocal Atrial Tachycardia:



In doubt contact our local cardiologists!

Next steps....

1- Look for evidence of:

- ✓ Symptoms of IHD
- ✓ Duration and pattern of AF: ?paroxysmal
- ✓ HF
- ✓ Structural HD: e.g. heart murmur
- ✓ Thyroid disease
- ✓ Other risk factors for stroke: hypertension, diabetes, smoking status

2- Blood tests:

- ✓ U&E
- ✓ FBC
- ✓ TFT
- ✓ LFTs
- ✓ Fasting lipids and glucose
- ✓ INR



3- Further investigations

- ✓ Chest x-ray: if suspicion of abnormality based on clinical history and examination
- ✓ Transthoracic echocardiography:
 - When important for long-term management e.g. younger patients
 - High risk or suspicion of underlying structural heart disease
 - Refinement of clinical risk stratification for antithrombotic therapy is needed
 - Rhythm control strategy including cardioversion is considered

The National Collaborating Centre for Chronic Conditions (2006), Atrial fibrillation: National clinical guideline for management in primary and secondary care [internet], The National Collaborative Centre for Chronic Conditions : Royal College of Physicians of London, available at <http://guidance.nice.org.uk/CG36/Guidance/pdf/English> [accessed 7/09/2007]

Heath, R. & Lip, G.Y.H. (2009), 10 steps before you refer for atrial fibrillation, British Journal of Cardiology, 15(6), pp. 302-305.

3- Initiate treatment: Risk stratify for risk of stroke

- ✓ Anticoagulation therapy:
 - Ideally on day one of diagnosis or as early as possible after diagnosis
 - **Estimate risk of stroke > e.g. CHAD2 score**
 - Estimate risk of bleeding

- ✓ Initiate rate control therapy:
 - BB first line
 - If CI, rate-limiting Ca⁺ antagonist
 - Especially if AF is not well tolerated

- ✓ ? Cardiology referral



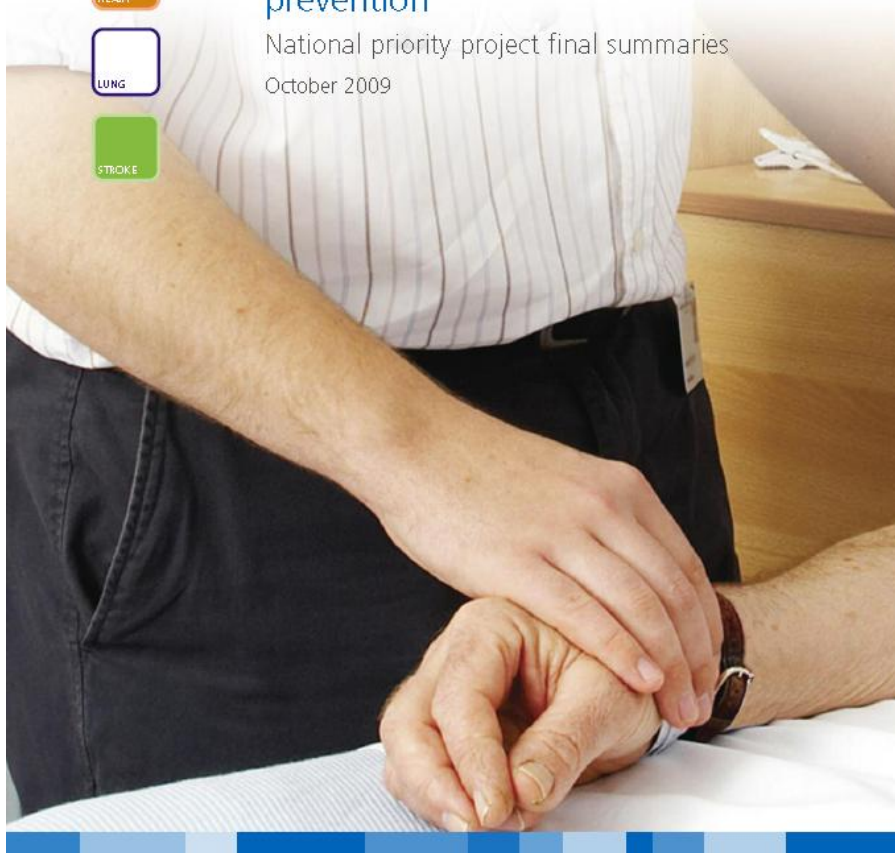
NHS Improvement



Heart and Stroke Improvement

Atrial fibrillation in primary care: making an impact on stroke prevention

National priority project final summaries
October 2009



<http://www.improvement.nhs.uk/stroke/NationalProjects/StrokePreventioninPrimaryCareAF/tabid/76/Default.aspx>

Conclusion:

- **TAKE YOUR PATIENTS' PULSE OPPORTUNISTICALLY**
- Think **effective** stroke prevention & do a **CHAD2 score**
 - ✓ 150,00 strokes per year in the UK
 - ✓ 410 per day, 17 per hour, 10 within the next 4 hours....
 - ✓ 8 would have been known to be at high risk of stroke
 - ✓ 6 should have been on Warfarin
 - ✓ 3 will go home, 5 will end up in residential care, 2 will die.....