

# **ATRIAL FIBRILLATION AND STROKE**

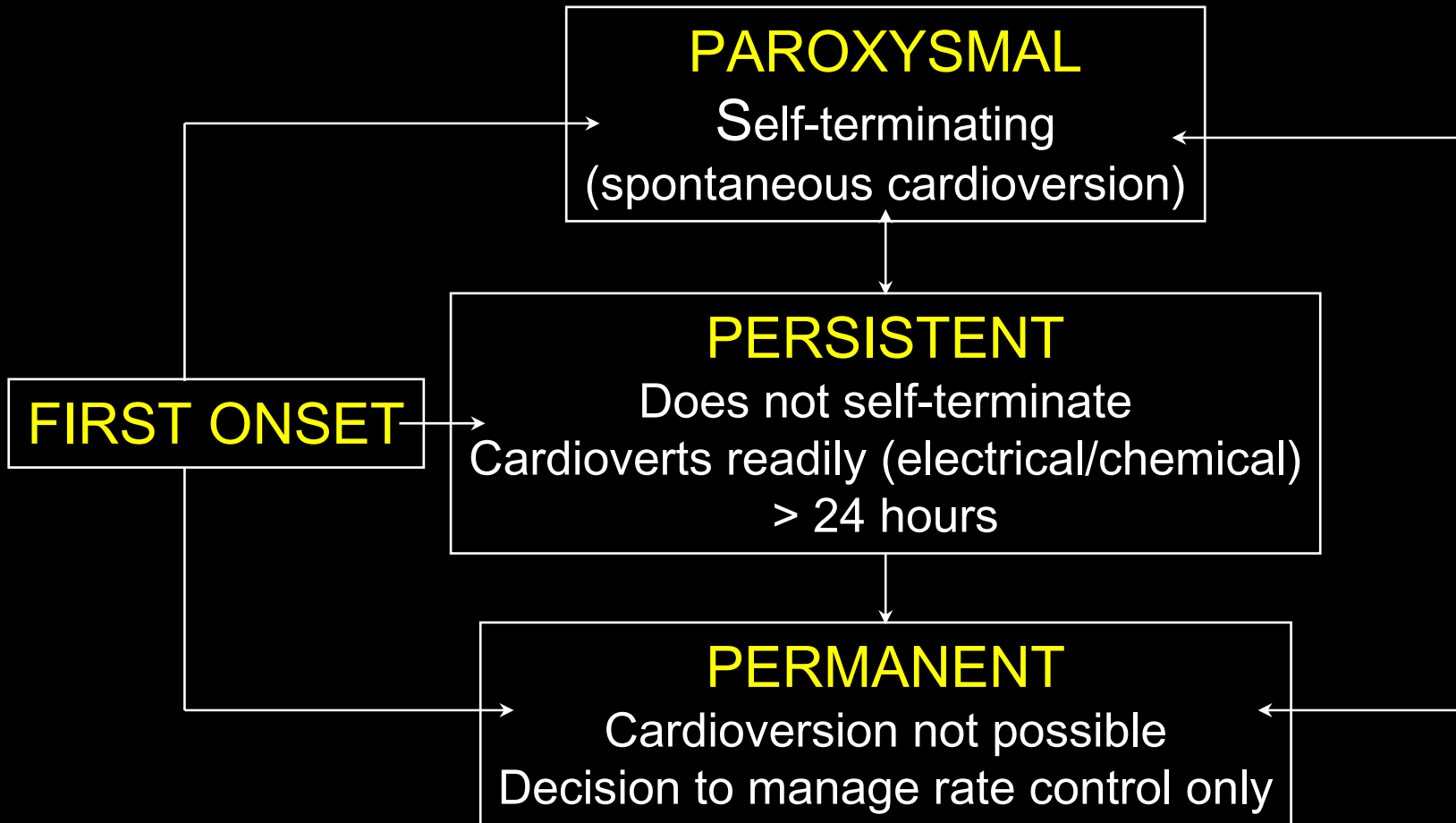
Slides adapted and prepared by Professor Richard Hobbs, University of Birmingham, UK

# Atrial Fibrillation - ECG Features

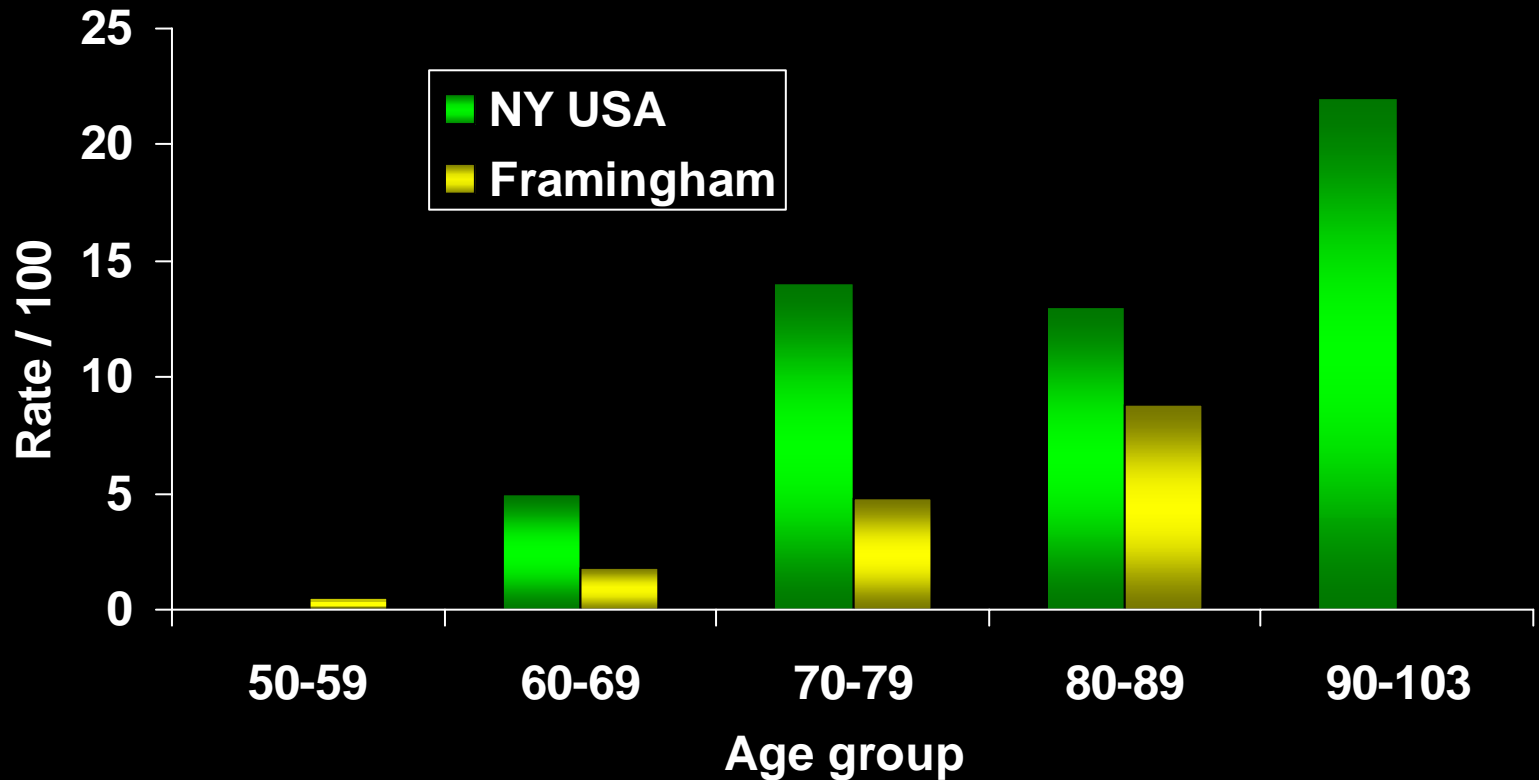
- Narrow irregular QRS complexes
- Undulating baseline without p waves
- Variable baseline (between and within patients)
- Variable ventricular response (AV nodal function and autonomic tone)



# Classification of Atrial Fibrillation (3Ps)

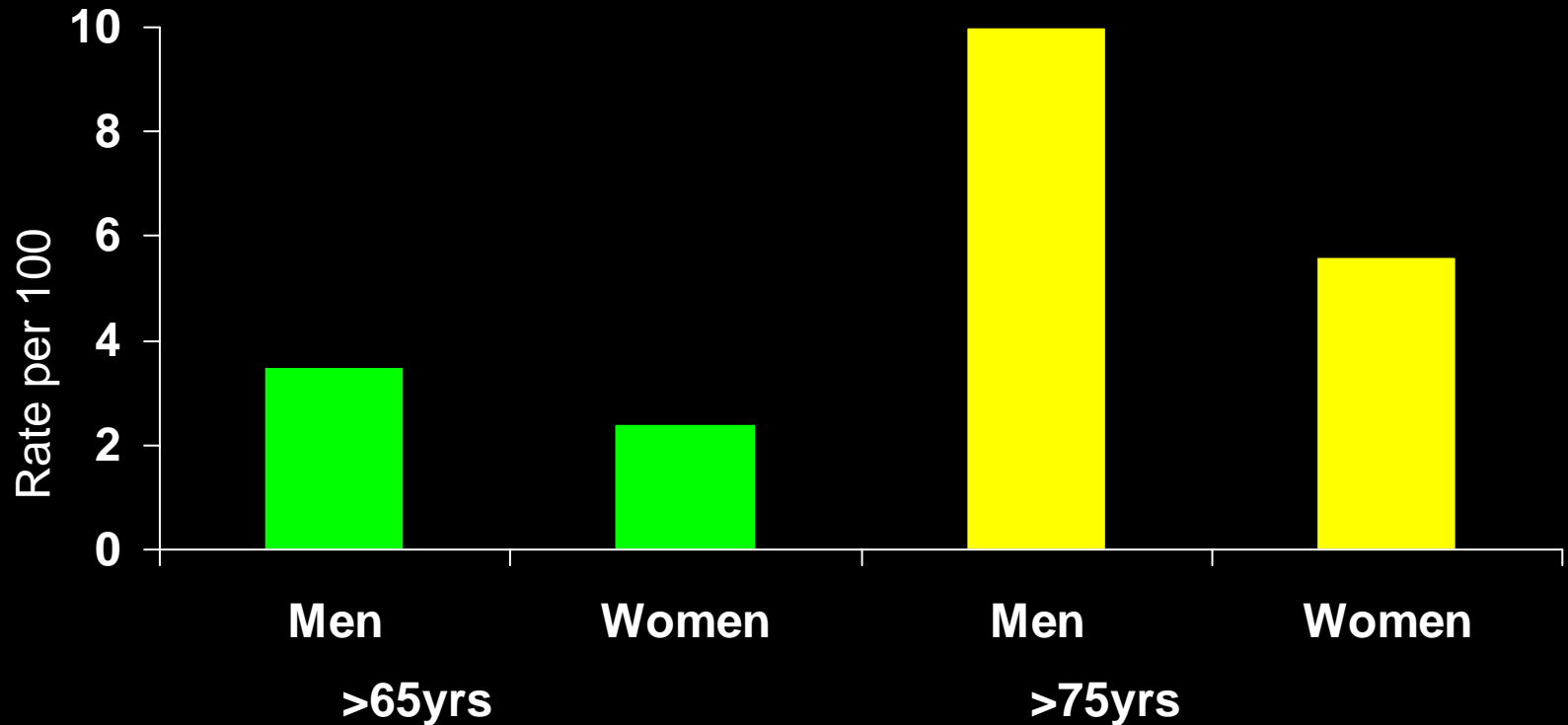


# Prevalence of AF



Aronow 1996  
Wolf 1991

# Prevalence of Atrial Fibrillation (UK)



(Sudlow 1998)

# Clinical Features of Atrial Fibrillation

Palpitations

Dyspnoea

(Pre) Syncope

Angina

Heart Failure

Increased Thromboembolism risk

Tachycardia-induced

Cardiomyopathy

Increased Mortality

**Asymptomatic**

# Diagnosing AF in primary care

## ◆ Pulse checks

- » Sensitivity 87% (CI 82-91%); specificity 81% (CI 80-83%)
- » PPV 30% (CI 27-34%)

## ◆ ECG

### – GP and nurse

- » GP sens 80% (CI 71-87%); spec 92% (CI 90-93%)
- » GP PPV 41% (34-48%)
- » PN sens 77% (CI 68-84%); spec 85% (CI 83-87%)
- » PN PPV 27% (CI 22-33%)

### – Interpretative software

- » Sens 87% (CI 82-91%); spec 99% (CI 99%)
- » PPV 90% (CI 85-93%)

### – Specialist interpretation

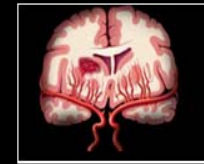
Hobbs et al, SAFE study, in press

# Stroke Pathology and outcome (30 days)

◆ Cerebral infarction – 10%



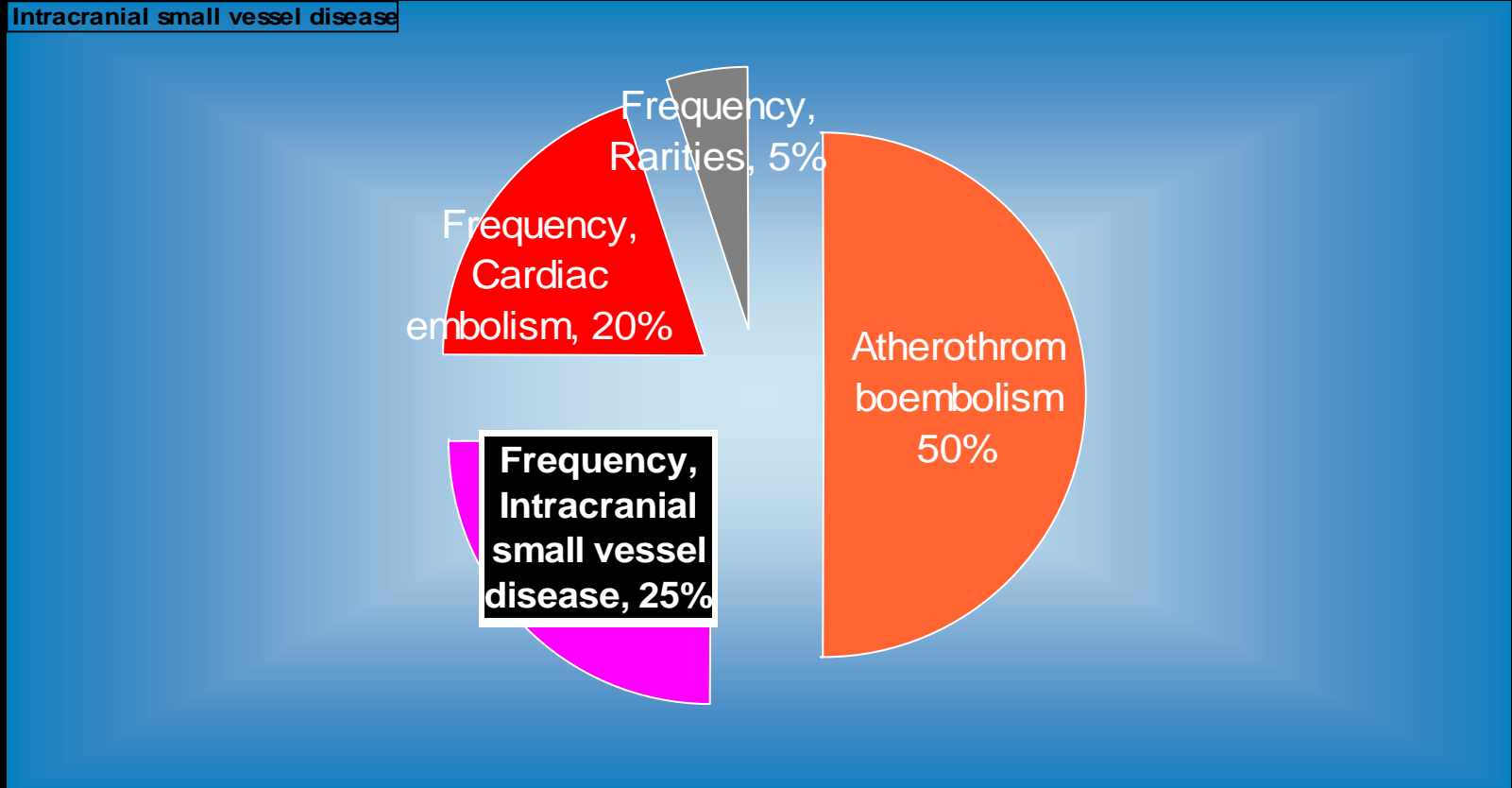
◆ Cerebral haemorrhage – 52%



◆ Subarachnoid Haemorrhage – 49%

OCSP 1990

# Causes of Ischaemic Stroke



# Clinical Features of Cardio-embolic Stroke

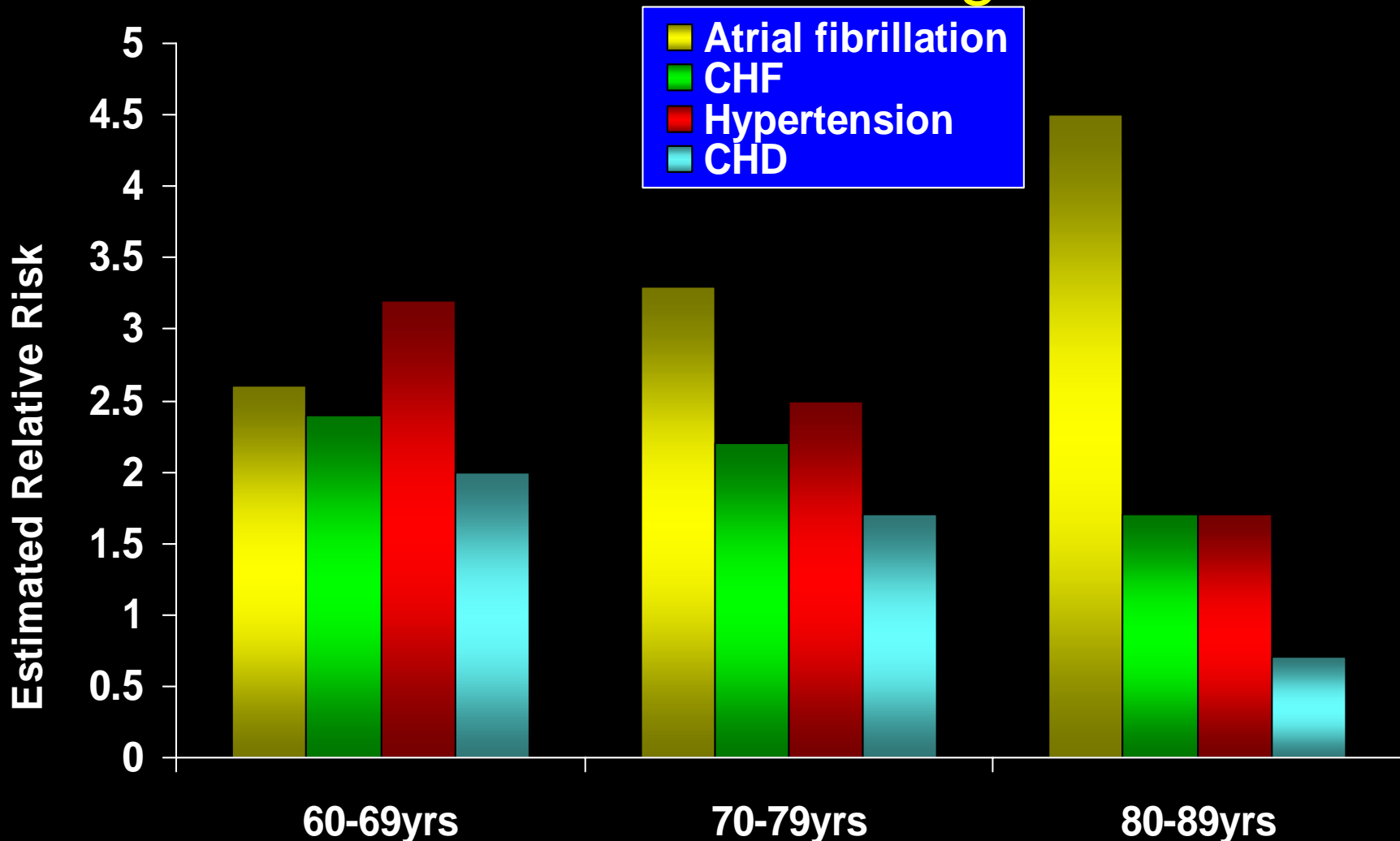
- ◆ Symptoms sudden and maximal at onset
- ◆ Unconsciousness or seizures at onset
- ◆ Larger, more disabling, more often fatal
- ◆ Anterior Circn-MCA territory involvement
- ◆ Posterior Circn-Post. Cerebral / top basilar

***Balance of probabilities vs. Alternative***

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***mechanisms***

# Relative Risk of Stroke According to the Changing Presence of Cardiovascular Disease With Age



# Atrial Fibrillation and Stroke

## Facts, figures and dilemmas:

- ◆ Anticoagulant treatment reduces risk of stroke in AF (2/3 RRR)
- ◆ Evidence from 16 RCTs, 10,000 participants
- ◆ Not all patients with AF have same risk
- ◆ Most / not all / some patients with AF are not prescribed warfarin
- ◆ The findings of trials cannot be extrapolated into routine clinical practice

# Impact of AF on risk of stroke

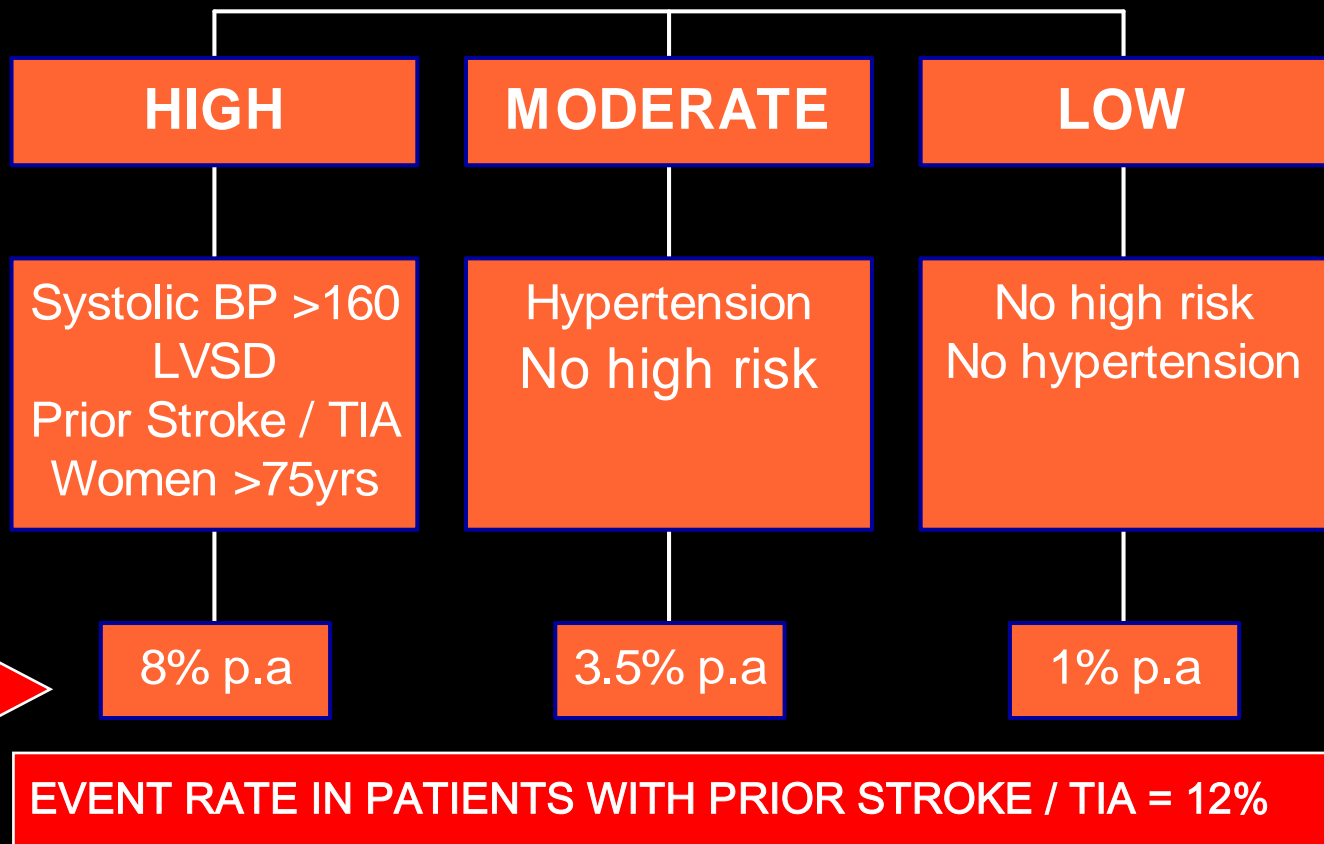
- ◆ AF increases risk of stroke 5-fold
  - Annual risk of stroke is 5% in AF patients
  - 15% of all acute stroke patients have AF
  - 36% of acute stroke patients >80 years have AF
- ◆ After initial stroke, risk of recurrence is 12% per year and annual risk of death is 5%

# Secondary impact of AF on stroke

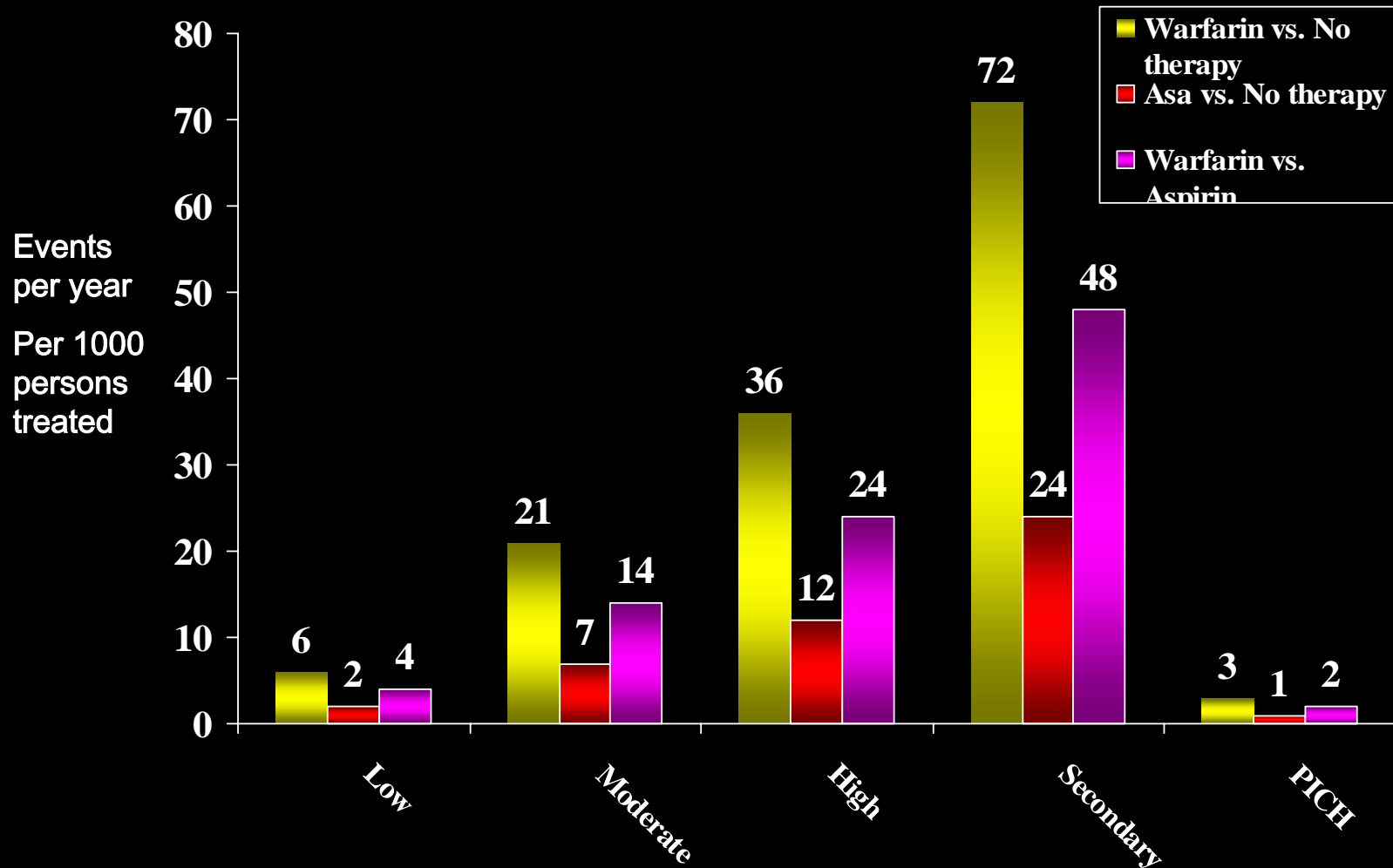
- ◆ Increases mortality of stroke by 70%
- ◆ Increases severity of stroke
  - Increases length of hospital stay by 20%
  - Decreases chance of returning home by 40%
  - Increases residual disability
- ◆ Higher recurrence rate
- ◆ Silent cerebral infarcts more frequent

# STROKE PREVENTION IN NVAF

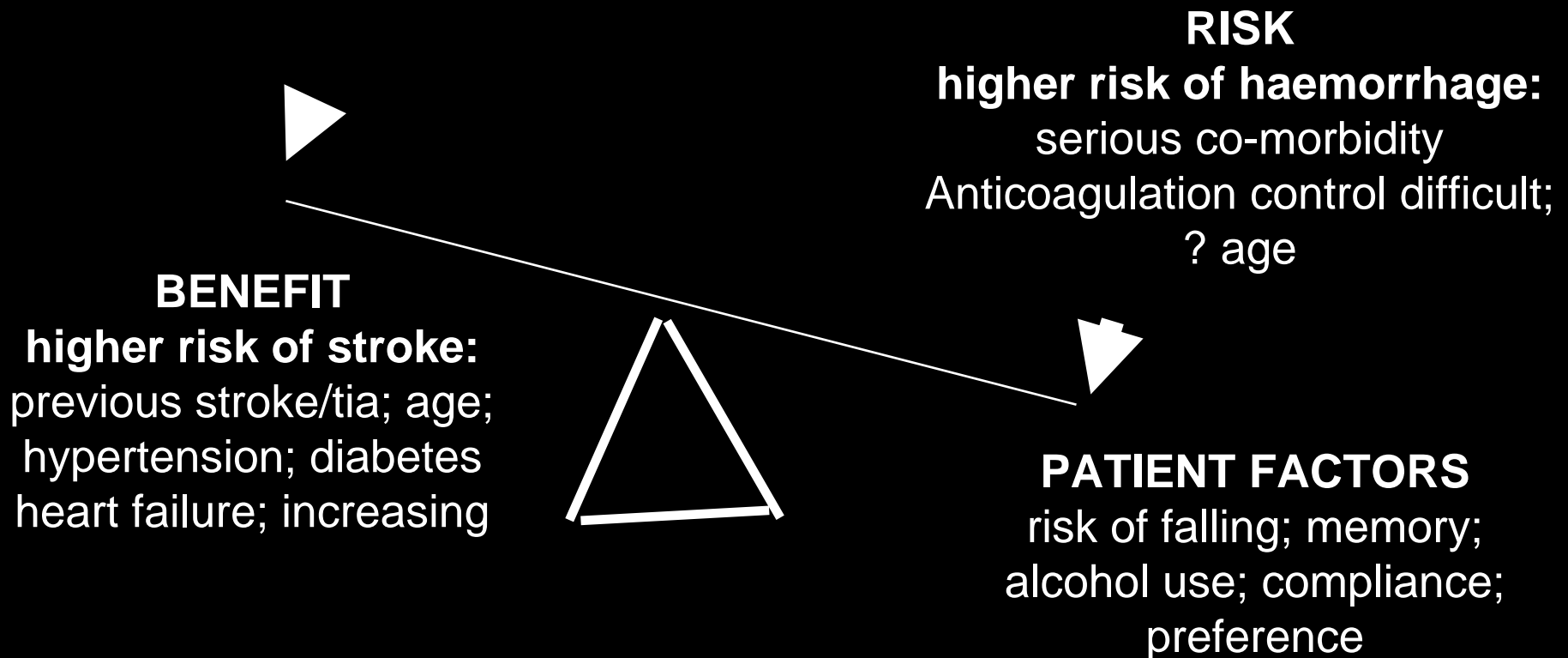
## RISK STRATIFICATION



# Estimated Size of Treatment Effects According to Risk Status in NVAF



# Why isn't the evidence being acted upon?



# WARFARIN FOR ALL ?

## Does Evidence Translate into Practice ?

### FACT:

Anticoagulation  
is under utilised  
in practice

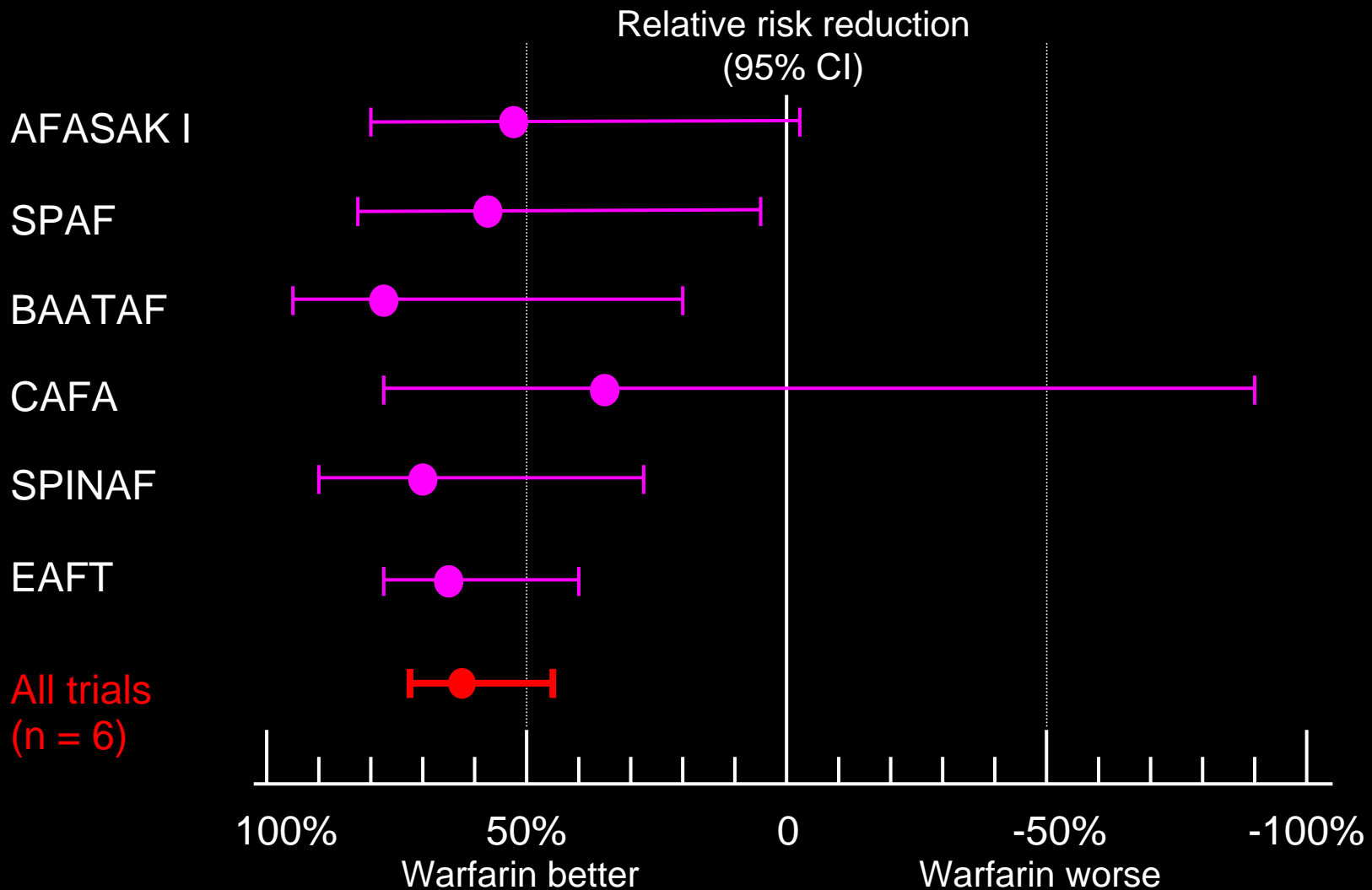
- ◆ RCTs unrepresentative of practice?
  - recruited/screened low
  - disproportionate men / younger patients
- ◆ Trials overestimation of benefit?
- ◆ A/C control / efficacy and complication rates not achievable?

# Warfarin for Stroke Prevention; Safety and Optimal Intensity

For the 5 PP Trials;

- ◆ Risk of haemorrhage related to age, intensity, fluctuations in INR
- ◆ Target INRs 1.4-4.5 (2.5-4 EAFT)
- ◆ Mean achieved INRs 2-2.6 (2.9 EAFT)
- ◆ Threshold INR associated with increased risk >75 yrs unknown

# Efficacy of warfarin vs. placebo



# Efficacy of Warfarin

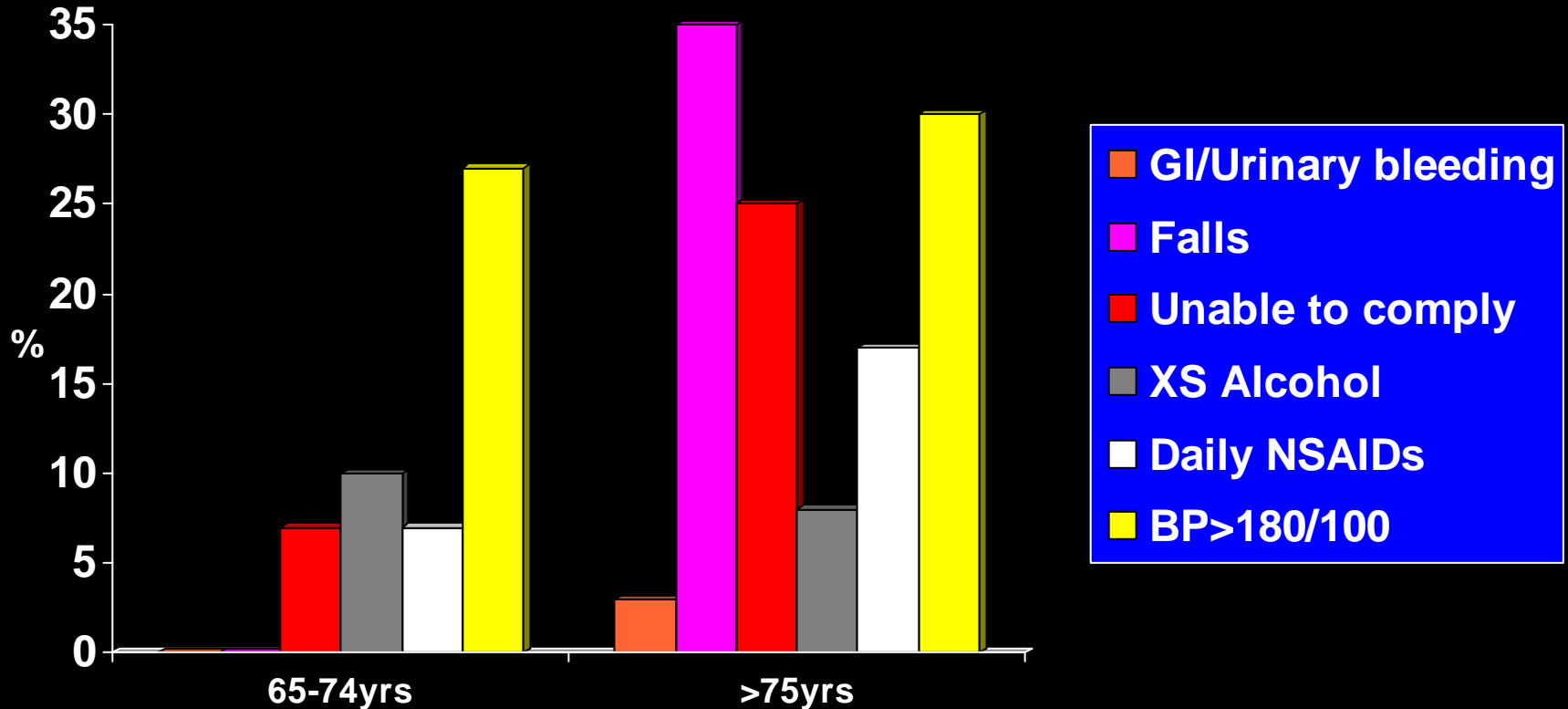
## Primary prevention

- ◆ Reduces risk of stroke by 68%
- ◆ Reduces annual stroke risk from 4.5 to 1.4%
- ◆ NNT for 1 year to prevent one stroke = 32

## Secondary prevention

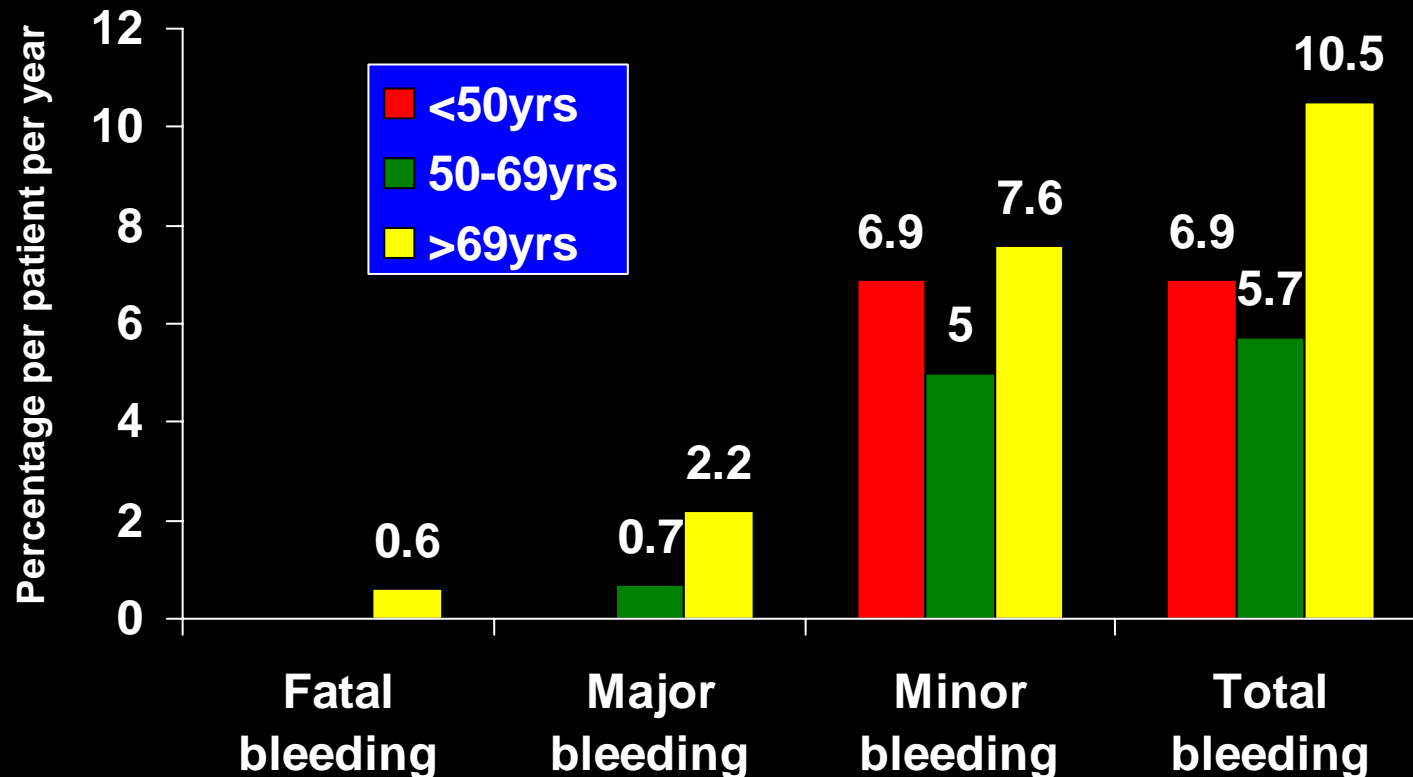
- ◆ Reduces risk of stroke by 66%
- ◆ Reduces annual stroke risk from 12 to 4%
- ◆ NNT for 1 year to prevent one stroke = 12

# CONTRAINDICATIONS TO ANTICOAGULANT THERAPY IN THE COMMUNITY



Sudlow et al 1998

# WHAT IS THE ABSOLUTE RISK OF BLEEDING ON ANTICOAGULANTS ?



(Palareti, Lancet 1996)

# Warfarin for the Very Elderly?

5 primary prevention studies:

- ◆ 223 patients > 75 yrs (Warfarin treated).
- ◆ Mean age 80 yrs (SD3)
- ◆ One ICH (rate 0.3% p.A.)
- ◆ Patients <75 yrs (rate 0.2% p.A.)

(Connolly 1994)

# Does Aspirin Work in NVAF?

- ◆ Six trials, 3337 patients, 33% > 75 yrs
- ◆ Mean follow up 1.5 yrs, aspirin dose 50-1300 mg/day
- ◆ Meta-analysis 22% RRR (CI 2-38%) abs RR 1.7%
- ◆ Only SPAF significant (325 mg) RRR 44%, SPAF non disabling stroke RRR 62%, disabling stroke RRR 17%
- ◆ SPAF, AFASAK, EAFT - combined 23% RRR ischaemic stroke (CI 0-40)
- ◆ Benefit of aspirin primarily -non disabling, non cardio-embolic stroke

# Aspirin is not without risk also

- ◆ Cost – 2 major extracranial bleeds, 1-2 major intracranial bleeds per 1000 patients treated for 29 months
- ◆ But – 1 in 10 patients intolerant of aspirin / clopidogrel
- ◆ And - Up to 30% will experience GI side effects – impact on concordance unknown

# HOW WELL ARE THE GUIDELINES FOLLOWED FOR ANTICOAGULATION IN AF?

Clinical implementation of anticoagulation guidelines....

Proportion of eligible AF pts *properly treated* in various clinical series:

	AC treated	AC CI
1993 AFASAK 2 (DK)	8%	6.5%
1994 Lip (UK)	20%	34%
1994 Gottlieb & Salem-Schatz (USA)	79%	20%
1994 Albers (USA)	44%	44%
1998 Sudlow (UK)	23%	10% (65-74 yrs.) 35% (> 75 yrs.)

# Atrial Fibrillation and Stroke

## Translating Evidence Into Practice

167 high risk, chronic NVAF patients, 75-90yrs (mean 76yrs)

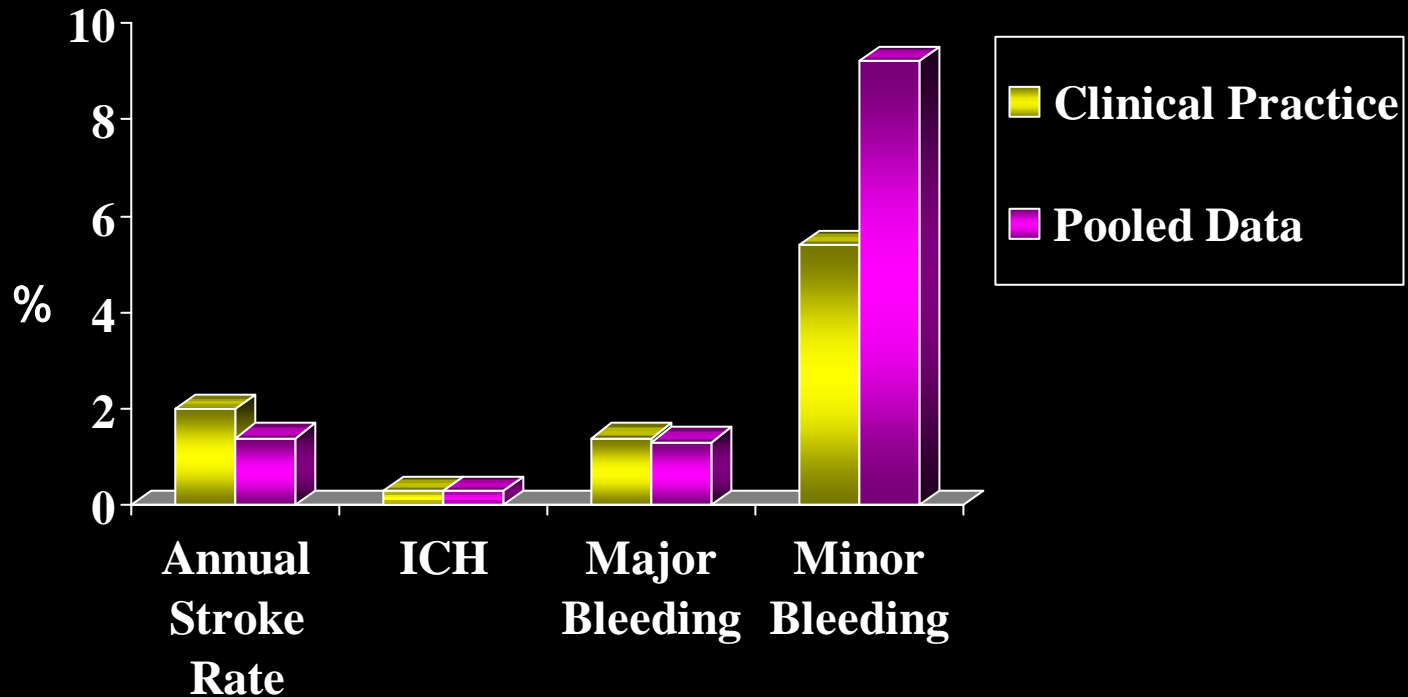
Follow up - 313 patient years

	Interval between INR	% Time in Range	% Time above Range
Clinical Practice	31 days	61%	13%
Pooled Data (5 Trials)	21-30 days	66%	9%

# Atrial Fibrillation and Stroke

## Translating Evidence Into Practice

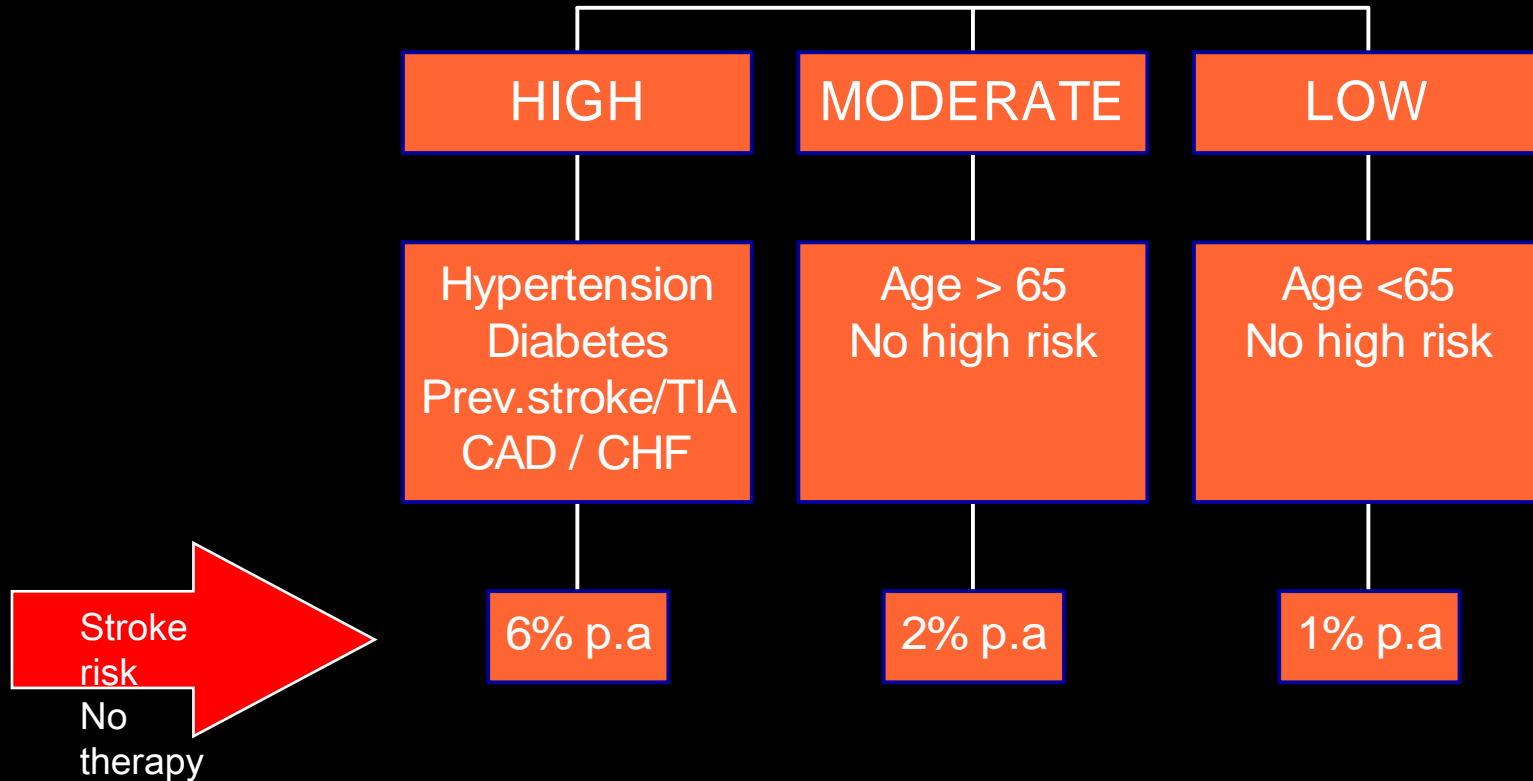
### Annual Event Rate (%) in patients taking warfarin



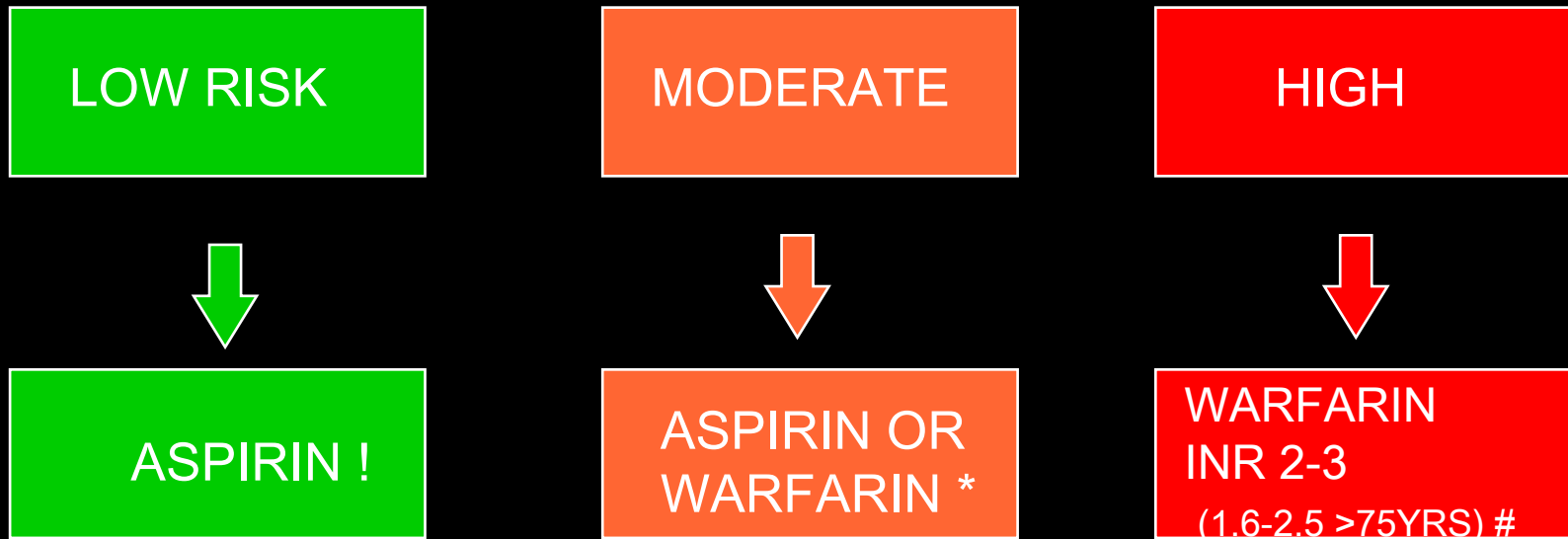
Kalra BMJ.  
2000

# STROKE PREVENTION IN NVAF

## RISK STRATIFICATION



# PREVENTION OF STROKE IN NVAF RECOMMENDATIONS



! Remember to follow carefully for development of high risk features

\* Consider patient preference and individual bleeding risks

# INR 2.0 option where bleeding concerns exist

Lone AF <60yrs - none