

# Risk factors for developing AF

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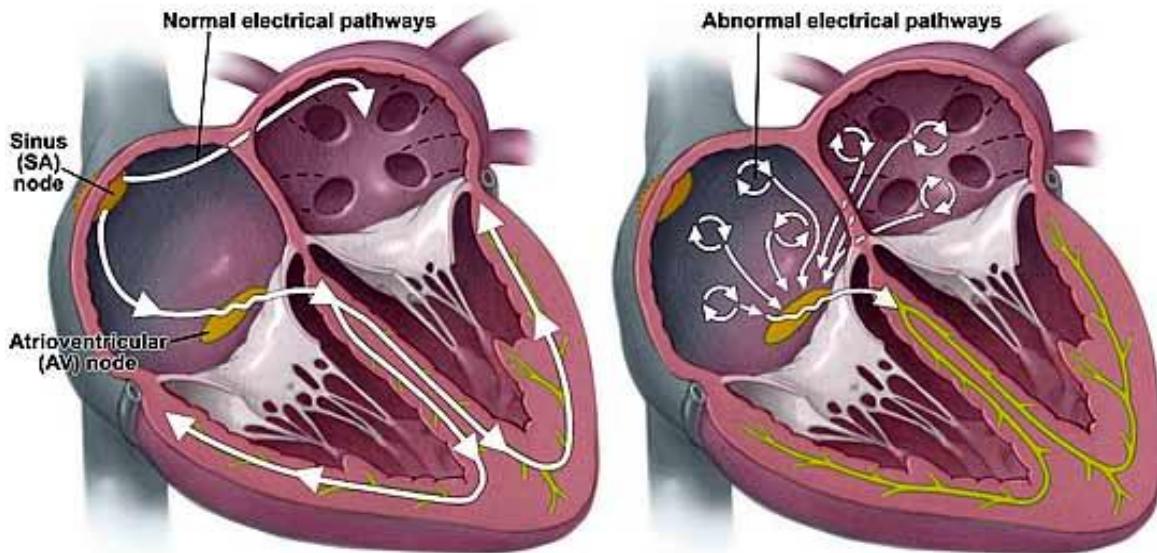
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# So what is Atrial fibrillation (AF)



Normal sinus rhythm



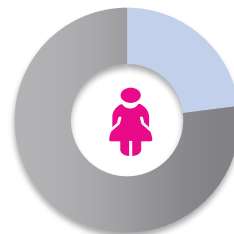
Atrial fibrillation



# The Lifetime Risk of Developing AF<sup>1</sup>

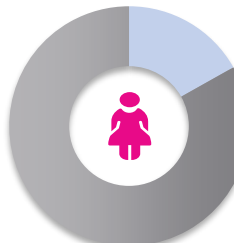
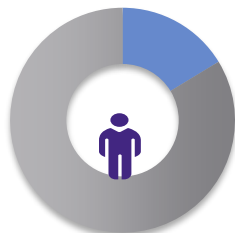
- ◆ At ≥40 years of age, the remaining lifetime risk for developing AF is ~1:4

- 26.0% for men
- 23.0% for women



- ◆ Lifetime risks for AF are high (1 in 6), even in the absence of antecedent congestive heart failure or myocardial infarction (MI)

- 16.3% for men
- 15.6% for women



# Different types of AF

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- ◆ Acute or Chronic
- ◆ First diagnosed AF
- ◆ **Paroxysmal AF** – reverts back to normal rhythm, usually within 48 hrs, but can last up to 7 days
- ◆ **Persistent AF** – sustained AF for longer than 7 days. Plans to try and cardiovert back to normal rhythm
- ◆ **Permanent AF** – sustained AF and either an active decision is made to live with it, or attempts to revert AF back to normal rhythm fail



# Risk factors – Acute AF

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- ◆ Heavy alcohol binge – “holiday heart”
- ◆ Infections – chest/urinary
- ◆ Shortly after major surgery
- ◆ Acute myocardial infarction (heart attack)
- ◆ Pulmonary embolism (clot on the lungs)
- ◆ Myocarditis/pericarditis (inflammation of the heart muscle or the ‘sac’ surrounding the heart)



# Risk factors – Chronic AF

## Older age

- ◆ Approximately 10% in the over 80s
- ◆ Approximately 20% in the over 90s



Age (years)	Hazard ratio (HR)
50-59	1.00 (reference)
60-69	4.98
70-79	7.35
80-89	9.33



# Risk factors – Chronic AF

## Hypertension (HT)

	HR
HT (treated) vs none	1.32



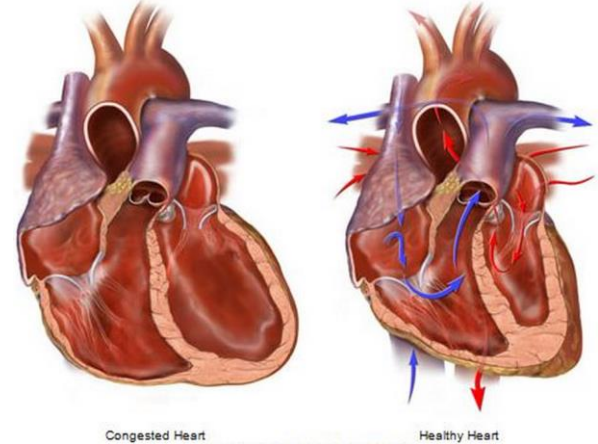
- ◆ HT is also a stroke risk factor
- ◆ Treatment with ACE inhibitors (e.g. Ramipril) or ARBs (e.g. Losartan) may reduce the chances of future AF
- ◆ Target BP = 140/90 (<80yrs) or 150/90 (>80yrs)



# Risk factors – Chronic AF

## Heart Failure

	HR
Heart failure	1.43



- ◆ Often coincide in the same patient
- ◆ “chicken or the egg” – tachycardia-mediated cardiomyopathy
- ◆ Carries a worse prognosis
- ◆ Treatment with anticoagulants is particularly important as it prolongs life



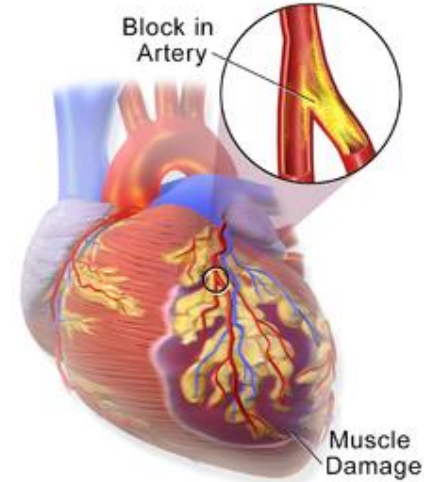


# Risk factors – Chronic AF



## Heart attack

	HR
Heart attack	1.46



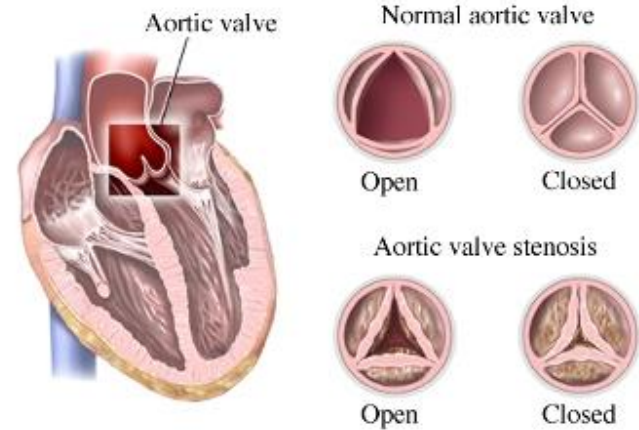
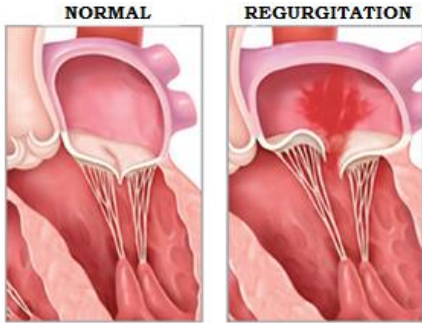
Heart Attack

- ◆ Muscle damage leads to cell death and replacement fibrosis
- ◆ Dial 999 if you ever have significant central chest discomfort lasting longer than 15 minutes!



# Risk factors – Chronic AF

## Valvular Heart Disease



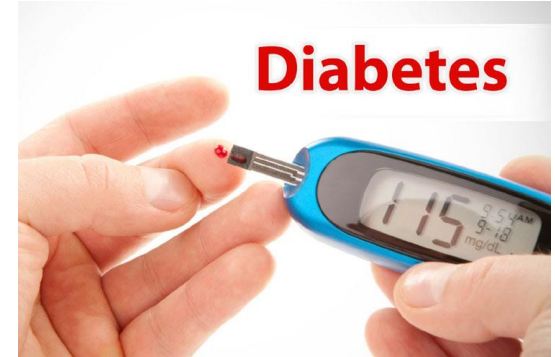
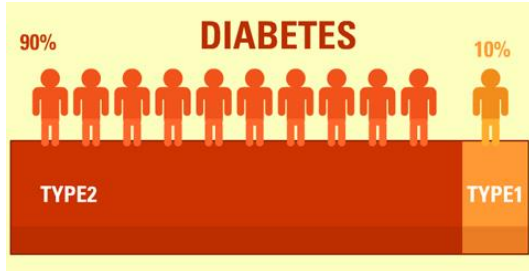
	HR
Valvular heart disease	2.42

- ◆ Approximately 30% of AF patients have valvular heart disease
- ◆ Associated with an increased stroke risk
- ◆ ‘Valvular AF’ defined as those with rheumatic mitral stenosis (mitral valve narrowing) or a mechanical valve



# Risk factors – Chronic AF

## Diabetes mellitus



	HR
diabetes	1.25

- ◆ Diabetes is a stroke risk factor
- ◆ Tight sugar control does not affect the rate of new AF
- ◆ Metformin treatment seems to have a lower risk of AF and stroke



# Risk factors – Chronic AF

## Alcohol consumption

	HR
none	1.00 (reference)
1-6 drinks/week	1.01
7-14 drinks/week	1.07
15-21 drinks/week	1.14
≥ 21 drinks/week	1.39

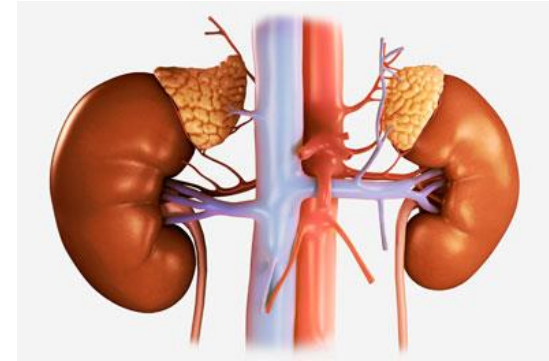
- ◆ Limit yourself to 1-2 drinks/day
- ◆ Have 2-3 alcohol-free days per week



# Risk factors – Chronic AF

## Chronic kidney disease (CKD)

	HR
none	1.00 (reference)
Stage 3	1.68
Stage 4-5	3.52



- ◆ AF is found in 15-20% of patients with CKD
- ◆ CKD is an important factor in the dose of the newer anticoagulants



# Risk factors – Chronic AF

## Obesity

	HR
None - BMI <25	1.00 (reference)
Overweight –BMI 25-29.9	1.13
Obese – BMI >30	1.37



- ◆ Obesity is a risk factor for stroke and increased death in AF patients
- ◆ Intensive weight loss (10-15kg) led to fewer AF recurrences and symptoms than usual care in one study
- ◆ Increase cardiovascular fitness can further reduce the AF burden



# Risk factors – Chronic AF

## smoking

	HR
Never	1.00 (reference)
Ex-smoker	1.32
Current smoker	2.05



# Risk factors – Chronic AF

## COPD and Obstructive sleep apnoea (OSA)

	HR
OSA	2.18
FEV1 60-80%	1.28
FEV1 <60%	2.53



- ◆ With OSA – risk factor reduction (weight loss) and CPAP treatment can reduce AF recurrences
- ◆ Note that some COPD treatments (Ventolin/Theophyllins) can cause AF

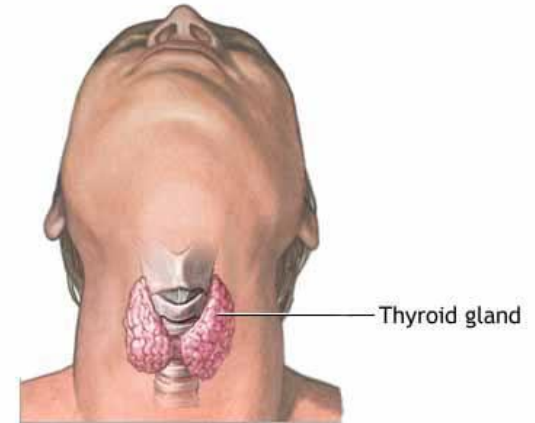




# Risk factors – Chronic AF

## Thyroid disease

	HR
Euthyroid	1.00 (reference)
Hypothyroidism	1.23
Subclinical hyperthyroidism	1.31
Overt hyperthyroidism	1.42



- ◆ Thyroid disease is common – 9-15% of adult females, less in males
- ◆ Important to check thyroid function tests every 6-12 months if on Thyroxine replacement therapy

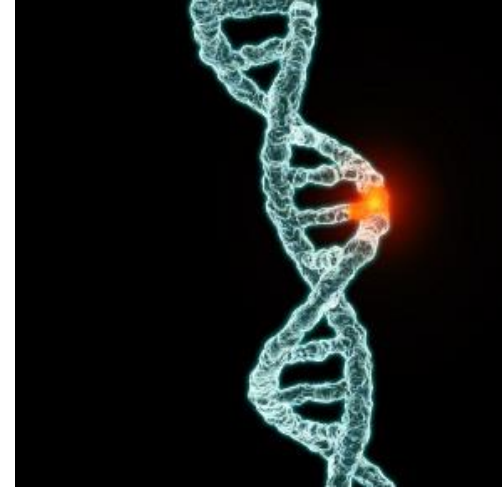


# Risk factors – Chronic AF

## Genetic predisposition

	HR
Genetic defects vs none	0.4-3.2

- ◆ Early onset AF has a strong inheritable component
- ◆ Up to one third of AF patients carry common genetic variants that predispose to AF –mostly single nucleotide polymorphisms
- ◆ Routine genetic testing is no recommended



# Risk factors – Chronic AF

## Habitual vigorous exercise!

	HR
None	1.00 (reference)
< 1 day/week	0.90
1-2 days/week	1.09
3-4 days/week	1.04
5-7 days/week	1.20



- ◆ BUT – remember the many other health benefits of exercise (improved fitness, reduces risk of high blood pressure, coronary artery disease, stroke, diabetes and some cancers, improves bone health, prevents obesity)



# Summary

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- ◆ There are many risk factors for developing AF
- ◆ Acute AF is caused by acute illnesses such as a heart attack, infection, clot on the lungs, surgery, inflammation of the heart
- ◆ Chronic AF has a few non-modifiable risk factors such as age, genetic predisposition, (valvular heart disease, heart attack, chronic kidney disease)



# Summary

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- ◆ Many risk factors can be modified and good control of these can reduce the AF burden – these include high blood pressure, diabetes, heart failure, obstructive sleep apnoea, thyroid disease
- ◆ Some are potentially preventable – smoking and COPD, excess alcohol consumption, obesity
- ◆ Exercise is good for you but too much increases your risk of AF!



# Thank you

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[www.heartrhythmcongress.org](http://www.heartrhythmcongress.org)