

**SUPPLEMENTAL MATERIAL**

**Supplemental Table 1A.** Prevalent, concurrent and future AF in 1166 HF participants (HFpEF vs HFrEF vs unclassified HF)

		No AF	Prevalent AF	Concurrent AF	Future AF
HFpEF (n=479)	n	181	154	88	56
	%	38	32	18	12
HFrEF (n=516)	n	234	121	94	67
	%	45	23	18	13
Unclassified HF (n=171)	n	87	42	32	10
	%	51	25	19	6
Total HF (n=1166)	n	502	317	214	133
	%	43	27	18	11

AF = atrial fibrillation; HF = heart failure; HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction.

**Supplemental Table 1B.** Previous, concurrent and future HF (HFpEF vs HFrEF vs unclassified HF) in those who had 1737 AF

		No HF	Prevalent HF	Concurrent HF	Future HF
Total AF (n=1737)	n	1101	145	214	277
	%	63	8	12	16
HFpEF	n		57	88	139
	%		3	5	8
HFrEF	n		67	94	111
	%		4	5	6
Unclassified HF	n		21	32	27
	%		1	2	2

AF = atrial fibrillation; HF = heart failure; HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction.

**Supplemental Table 2.** Baseline characteristics of participants included in mortality analysis

	<b>HF</b> N=759	<b>HFpEF</b> N=309	<b>HFrEF</b> N=360	<b>AF</b> N=1191
Age, years	78±10	79 ± 11	77 ± 10	75 ± 11
Women, n (%)	355 (47)	182 (59)	123 (34)	514 (43)
Height, cm	164 ± 11	162 ± 11	166 ± 10	166 ± 11
Weight, kg	75 ± 18	75 ± 19	77 ± 17	77 ± 18
Body mass index, kg/m <sup>2</sup>	28 ± 5	29 ± 6	28 ± 5	28 ± 5
Systolic blood pressure, mmHg	143 ± 22	142 ± 21	143 ± 23	140 ± 22
Diastolic blood pressure, mmHg	73 ± 12	73 ± 11	73 ± 12	74 ± 11
Hypertension treatment, n (%)	492 (65)	222 (72)	221 (61)	664 (56)
Prevalent myocardial infarction, n (%)	321 (42)	86 (28)	196 (54)	274 (23)
Smoking, n (%)	110 (14)	41 (13)	58 (16)	177 (15)
Diabetes mellitus, n (%)	196 (26)	73 (24)	106 (29)	201 (17)
Left ventricular hypertrophy, n (%)	70 (10)	21 (7)	40 (12)	55 (5)
Prevalent HF, n (%)	-	-	-	214 (18)
Prevalent AF, n (%)	295 (39)	128 (41)	130 (36)	-

Values are mean ± SD unless otherwise noted.

AF = atrial fibrillation; HF = heart failure; HFpEF=heart failure with preserved ejection fraction; HFrEF=heart failure with reduced ejection fraction.

**Supplemental Table 3.** Sex-specific, age-standardized incident rates of HF among those with AF

	<b>Men</b>	<b>Women</b>
	Incidence rate per 1000 person-years (95% CI)	Incidence rate per 1000 person-years (95% CI)
Incident HF	50.7 (41.9, 59.6)	56.0 (45.5, 66.6)
Incident HFpEF	21.2 (15.3, 27.0)	35.1 (26.9, 43.4)
Incident HFrEF	27.2 (20.8, 33.5)	12.4 (7.4, 17.4)

CI=confidence interval; HF=heart failure; HFpEF=heart failure with preserved ejection fraction; HFrEF=heart failure with reduced ejection fraction.

**Supplemental Table 4.** Incidence rates of cause-specific death among participants with AF

	<b>Coronary heart disease death</b>	<b>Cerebrovascular death</b>	<b>Other cardiovascular death</b>
	<b>Incidence rates (95% CI)</b>	<b>Incidence rates (95% CI)</b>	<b>Incidence rates (95% CI)</b>
No heart failure	11.62 (8.44-14.80)	8.58 (5.88-11.28)	14.82 (11.18-18.47)
HFpEF	14.38 (1.45-27.31)	18.80 (3.61-33.99)	52.19 (26.20-78.18)
HFrEF	95.65 (57.87-133.4)	7.63 (-1.10-16.35)	85.15 (50.84-119.5)

CI=confidence interval; HFpEF=heart failure with preserved ejection fraction; HFrEF=heart failure with reduced ejection fraction.

**Supplemental Table 5.** Cumulative incidence and 95% confidence intervals for Figures 2 and 3

Outcome	Group	Year 4 cumulative incidence (%)		Year 8 cumulative incidence (%)	
		Est	95% CI	Est	95% CI
Incident AF (Fig 2A)	Prev HF	0.11	(0.06-0.19)	0.20	(0.12-0.29)
	No HF	0.02	(0.02-0.03)	0.05	(0.05-0.06)
Incident HFPEF (Fig 2B)	Prev AF	0.03	(0.02-0.06)	0.07	(0.05-0.10)
	No AF	0.01	(0.00-0.01)	0.01	(0.01-0.01)
Incident HFREF (Fig 2B)	Prev AF	0.05	(0.03-0.07)	0.08	(0.05-0.11)
	No AF	0.01	(0.01-0.01)	0.02	(0.01-0.02)
Mortality after HF (Fig 3A)	Prev AF	0.57	(0.51-0.62)	0.83	(0.78-0.87)
	No AF	0.56	(0.51-0.60)	0.77	(0.72-0.80)
Mortality after AF (Fig 3B)	Prev HFpEF	0.53	(0.42-0.63)	0.78	(0.66-0.86)
	Prev HFrEF	0.63	(0.54-0.71)	0.86	(0.78-0.91)
	No HF	0.31	(0.28-0.34)	0.51	(0.47-0.54)

## **Supplemental Figure legends**

### **Supplemental Figure 1: Study design**

**Panel A** displays participants free of prevalent AF.

**Panel B** displays participants free of prevalent HF

### **Supplemental Figure 2: Inclusion and exclusion criteria for study sample.**

**Panel A** shows samples included in the incident AF and HF analyses.

**Panel B** shows samples included in the mortality after AF and HF analyses.

### **Supplemental Figure 3: Time between diagnosis of AF and HF diagnosis (years)**

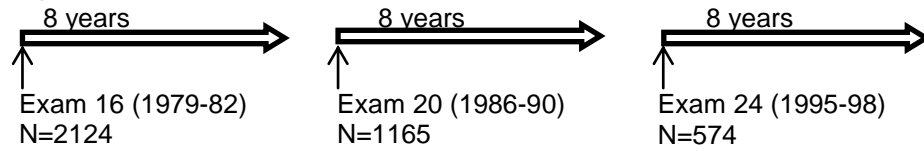
**Panel A** displays time between diagnosis of AF and HFpEF.

**Panel B** displays time between diagnosis of AF and HFrEF. Zero represents AF and HF diagnosis on the same day.

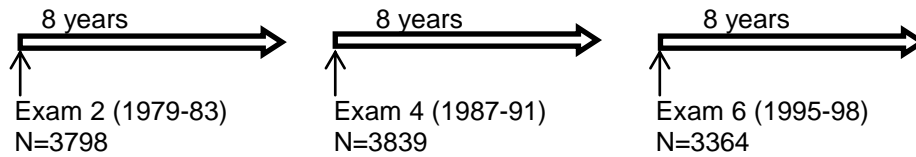
**Supplemental Figure 1**

**A.**

**Original cohort**

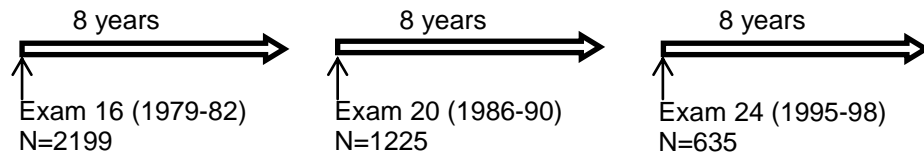


**Offspring cohort**

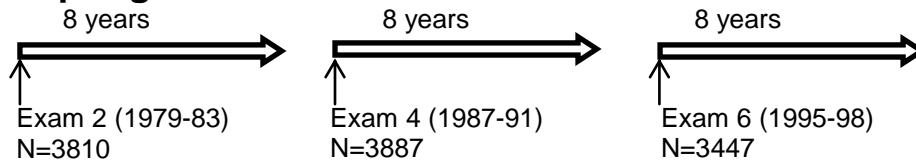


**B.**

**Original cohort**



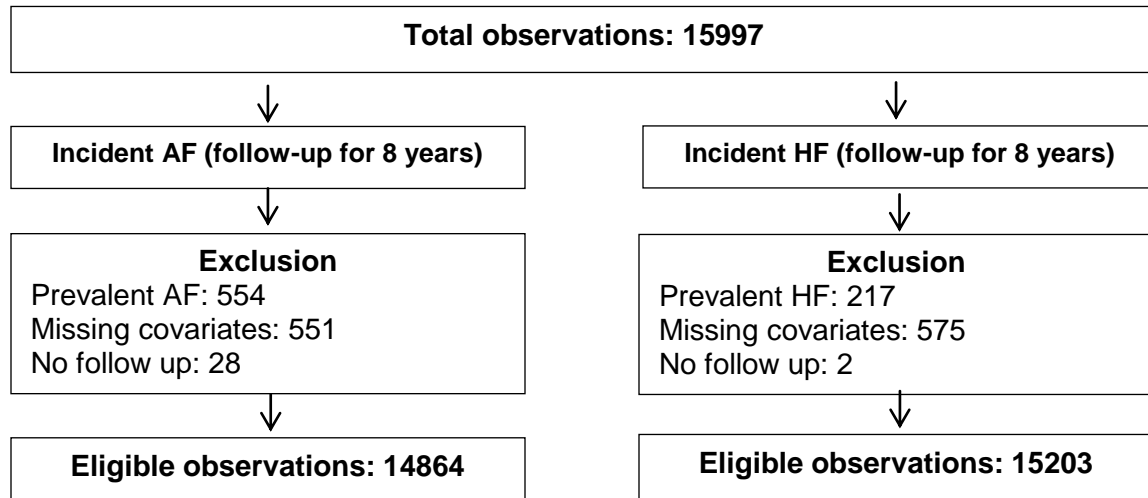
**Offspring cohort**



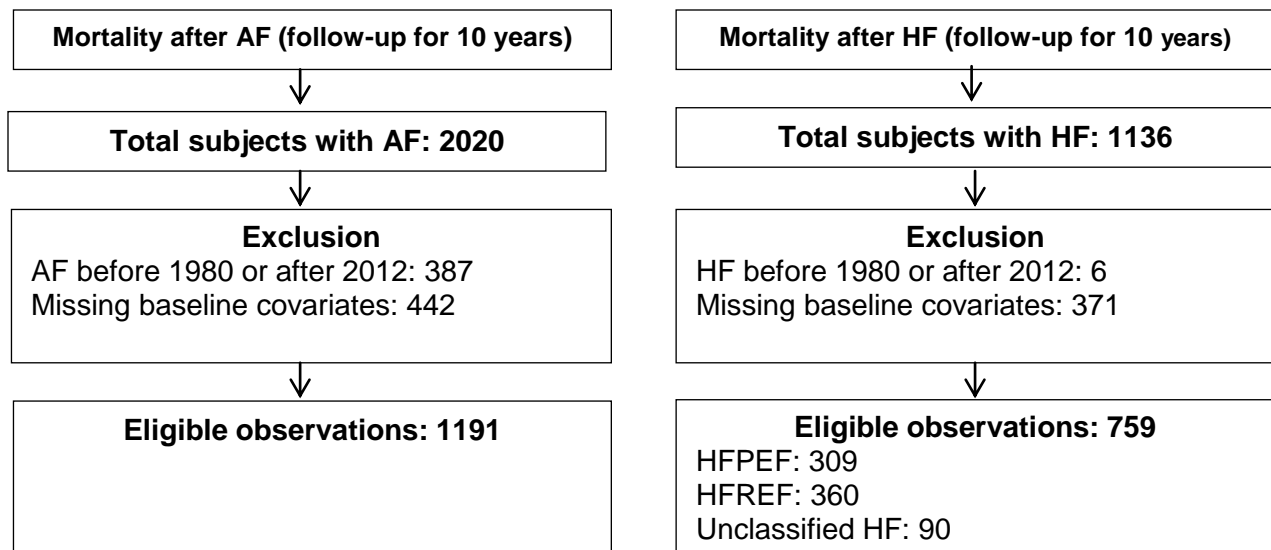


## Supplemental Figure 2

A.

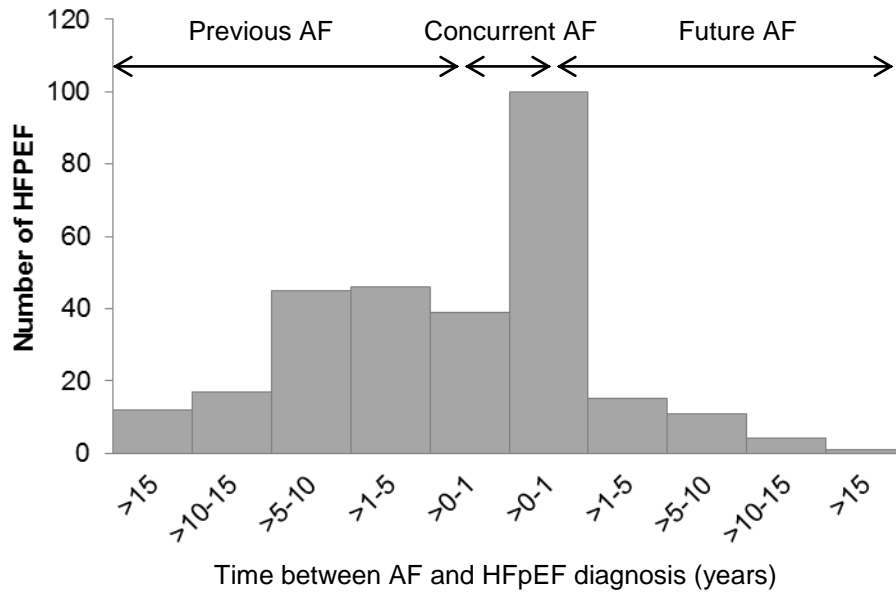


B.



### Supplemental Figure 3

A.



B.

