

# **Health conditions in adults with atrial fibrillation compared with the general population: a population-based cross-sectional analysis.**

## **SUPPLEMENTARY MATERIAL**

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**Supplementary table 1 Primary care codes to identify adults with atrial fibrillation.**

| Medcode | Read code (v2) | Description                                                  |
|---------|----------------|--------------------------------------------------------------|
| 90190   | 9Os3.00        | Atrial fibrillation monitoring verbal invite                 |
| 1664    | G573000        | Atrial fibrillation                                          |
| 93460   | 14AR.00        | History of atrial flutter                                    |
| 28994   | 212R.00        | Atrial fibrillation resolved                                 |
| 90187   | 9Os0.00        | Atrial fibrillation monitoring first letter                  |
| 96277   | G573400        | Permanent atrial fibrillation                                |
| 1757    | G573100        | Atrial flutter                                               |
| 57832   | 9Os..00        | Atrial fibrillation monitoring administration                |
| 3757    | 3272.00        | ECG: atrial fibrillation                                     |
| 35127   | G573300        | Non-rheumatic atrial fibrillation                            |
| 90191   | 9Os4.00        | Atrial fibrillation monitoring telephone invite              |
| 39114   | 9hF1.00        | Excepted from atrial fibrillation qual indic: Inform dissent |
| 2212    | G573.00        | Atrial fibrillation and flutter                              |
| 45773   | 6A9..00        | Atrial fibrillation annual review                            |
| 63350   | 9hF..00        | Exception reporting: atrial fibrillation quality indicators  |
| 90189   | 9Os2.00        | Atrial fibrillation monitoring third letter                  |
| 90188   | 9Os1.00        | Atrial fibrillation monitoring second letter                 |
| 6345    | 14AN.00        | H/O: atrial fibrillation                                     |
| 6771    | 3273.00        | ECG: atrial flutter                                          |
| 18746   | 662S.00        | Atrial fibrillation monitoring                               |
| 96076   | G573500        | Persistent atrial fibrillation                               |
| 23437   | G573z00        | Atrial fibrillation and flutter NOS                          |
| 1268    | G573200        | Paroxysmal atrial fibrillation                               |

**Supplementary table 2 ICD-10 codes related to atrial fibrillation.**

| ICD-10 code | ICD-10 term                                         |
|-------------|-----------------------------------------------------|
| I48.0       | Paroxysmal atrial fibrillation                      |
| I48.1       | Persistent atrial fibrillation                      |
| I48.2       | Chronic atrial fibrillation                         |
| I48.3       | Typical atrial flutter                              |
| I48.4       | Atypical atrial flutter                             |
| I48.9       | Atrial fibrillation and atrial flutter, unspecified |

**Supplementary table 3 List of codelists excluded from analysis and reason for exclusion.**

| <b>Codelists excluded</b>                                       | <b>Reason for excluding</b>                                                                                             |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Diabetes (aggregate)                                            | Type 1 and 2 diabetes mellitus, diabetic neuropathy and diabetic ophthalmic complications as individual conditions only |
| Postcoital and contact bleeding                                 | Symptoms rather than a disease                                                                                          |
| Respiratory failure                                             | Non-specific term                                                                                                       |
| Sickle-cell trait                                               | Not a disease but a carrier of one gene responsible for sickle cell disease                                             |
| Thalassaemia trait                                              | Not a disease but a carrier of one gene responsible for thalassaemia                                                    |
| Pleural plaque                                                  | Asymptomatic and not a disease in itself                                                                                |
| Female infertility                                              | Risk of double coding for a male and female partner                                                                     |
| Male infertility                                                | Risk of double coding for a male and female partner                                                                     |
| Patent ductus arteriosus                                        | Perinatal condition                                                                                                     |
| Bacterial sepsis of newborn                                     | Perinatal condition                                                                                                     |
| Cerebral palsy                                                  | Perinatal condition                                                                                                     |
| Congenital malformations of cardiac septa                       | Perinatal condition                                                                                                     |
| Diaphragmatic hernia                                            | Perinatal condition                                                                                                     |
| High birth weight                                               | Perinatal condition                                                                                                     |
| Intrauterine hypoxia                                            | Perinatal condition                                                                                                     |
| Neonatal jaundice (excluding haemolytic disease of the newborn) | Perinatal condition                                                                                                     |
| Post-term infant                                                | Perinatal condition                                                                                                     |
| Prematurity                                                     | Perinatal condition                                                                                                     |
| Respiratory distress of newborn                                 | Perinatal condition                                                                                                     |
| Slow foetal growth or low birth weight                          | Perinatal condition                                                                                                     |
| Spina bifida                                                    | Perinatal condition                                                                                                     |
| Undescended testicle                                            | Perinatal condition                                                                                                     |

**Supplementary table 4 Aggregate of individual codelists.**

| <b>Aggregate</b>                                                                             | <b>Codelists</b>                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cardiomyopathy                                                                               | Dilated cardiomyopathy<br>Hypertrophic cardiomyopathy<br>Other cardiomyopathy                                                                                                                                        |
| Conduction disorder                                                                          | Atrioventricular block first degree<br>Atrioventricular block second degree<br>Atrioventricular block complete<br>Bifascicular block<br>Left bundle branch block<br>Right bundle branch block<br>Trifascicular block |
| Coronary heart disease                                                                       | Coronary heart disease not otherwise specified<br>Myocardial infarction<br>Stable angina<br>Unstable angina                                                                                                          |
| Fracture of hip, wrist or vertebra                                                           | Collapsed vertebra<br>Fracture of hip<br>Fracture of wrist                                                                                                                                                           |
| Gastritis duodenitis and peptic ulcer disease                                                | Gastritis and duodenitis<br>Peptic ulcer disease                                                                                                                                                                     |
| Gastro oesophageal reflux disease<br>oesophagitis and oesophageal ulcer                      | Gastro oesophageal reflux disease<br>Oesophagitis and oesophageal ulcer                                                                                                                                              |
| Heart valve disorder                                                                         | Multiple valve disease<br>Nonrheumatic aortic valve disorders<br>Nonrheumatic mitral valve disorders<br>Rheumatic valve disease                                                                                      |
| Inflammatory bowel disease                                                                   | Crohn's disease<br>Ulcerative colitis                                                                                                                                                                                |
| Nervous system infection                                                                     | Encephalitis<br>Meningitis<br>Other nervous system infections                                                                                                                                                        |
| Osteoarthritis                                                                               | Osteoarthritis (excluding spine)<br>Spondylosis                                                                                                                                                                      |
| Other infection                                                                              | Other or unspecified infectious organisms<br>Infections of other or unspecified organs                                                                                                                               |
| Peripheral or autonomic neuropathy<br>(excluding cranial nerve or carpal tunnel<br>syndrome) | Diabetic neurological complications<br>Disorders of autonomic nervous system<br>Peripheral neuropathies (excluding cranial nerve and carpal<br>tunnel syndromes)                                                     |
| Primary malignancy other                                                                     | Primary malignancy multiple independent sites<br>Primary malignancy other organs                                                                                                                                     |
| Pulmonary hypertension                                                                       | Primary pulmonary hypertension<br>Secondary pulmonary hypertension                                                                                                                                                   |
| Severe liver disease                                                                         | Liver failure<br>Liver fibrosis sclerosis and cirrhosis<br>Oesophageal varices<br>Portal hypertension                                                                                                                |
| Stroke                                                                                       | Intracerebral haemorrhage<br>Ischaemic stroke<br>Stroke NOS                                                                                                                                                          |
| Thrombocytopenia                                                                             | Primary or idiopathic thrombocytopaenia<br>Secondary or other thrombocytopaenia                                                                                                                                      |

**Supplementary table 5 Proportion of adults with a previous lipid blood test.**

|                                                  | <b>With AF, n (%) (N= 34,338)</b> | <b>Without AF, n (%) (N= 907,739)</b> |
|--------------------------------------------------|-----------------------------------|---------------------------------------|
| Raised cholesterol                               | 32750 (95.4)                      | 534480 (58.9)                         |
| Low high-density lipoprotein (HDL) cholesterol   | 31534 (91.8)                      | 505534 (55.7)                         |
| Raised low-density lipoprotein (LDL) cholesterol | 30181 (87.9)                      | 460159 (50.7)                         |
| Raised triglycerides                             | 30823 (89.8)                      | 466995 (51.4)                         |

*AF= atrial fibrillation.*

**Supplementary table 6 Prevalence and odds ratio of endocrine and lipid conditions in adults with atrial fibrillation compared to adults without atrial fibrillation.**

| Health condition                                            | Adults with AF, n (%)<br>(N=34,338) | Adults without AF, n (%)<br>(N=907,739) | Unadjusted OR<br>(95%CI) | OR adjusted for age and sex<br>(95%CI) | OR adjusted for age, sex and IMD<br>(95%CI) |
|-------------------------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|----------------------------------------|---------------------------------------------|
| <b>Endocrine and diabetes</b>                               |                                     |                                         |                          |                                        |                                             |
| Hyperparathyroidism                                         | 421 (1.2)                           | 2510 (0.3)                              | 4.48 (4.03-4.96)         | 1.62 (1.45-1.81)                       | 1.61 (1.44-1.80)                            |
| Obesity                                                     | 4070 (11.9)                         | 55054 (6.1)                             | 2.08 (2.01-2.15)         | 1.52 (1.46-1.57)                       | 1.49 (1.44-1.54)                            |
| Syndrome of inappropriate secretion of antidiuretic hormone | 172 (0.5)                           | 694 (0.1)                               | 6.58 (5.55-7.76)         | 1.53 (1.28-1.82)                       | 1.53 (1.28-1.82)                            |
| Type 1 diabetes mellitus                                    | 131 (0.4)                           | 3804 (0.4)                              | 0.91 (0.76-1.08)         | 1.17 (0.97-1.40)                       | 1.17 (0.97-1.39)                            |
| Type 2 diabetes mellitus                                    | 6629 (19.3)                         | 51293 (5.7)                             | 3.99 (3.88-4.11)         | 1.25 (1.21-1.28)                       | 1.23 (1.20-1.27)                            |
| Thyroid disease                                             | 5606 (16.3)                         | 54860 (6.0)                             | 3.03 (2.94-3.13)         | 1.53 (1.48-1.58)                       | 1.52 (1.47-1.58)                            |
| <b>Abnormal lipid level</b>                                 |                                     |                                         |                          |                                        |                                             |
| Low HDL (high-density lipoprotein) cholesterol              | 5820 (16.9)                         | 71571 (7.9)                             | 2.38 (2.32-2.45)         | 1.33 (1.29-1.38)                       | 1.32 (1.28-1.36)                            |
| Raised cholesterol                                          | 10515 (30.6)                        | 280223 (30.9)                           | 0.99 (0.97-1.01)         | 0.36 (0.35-0.37)                       | 0.36 (0.35-0.37)                            |
| Raised LDL (low-density lipoprotein) cholesterol            | 9912 (28.9)                         | 239899 (26.4)                           | 1.13 (1.10-1.16)         | 0.44 (0.43-0.46)                       | 0.45 (0.43-0.46)                            |
| Raised triglycerides                                        | 3542 (10.3)                         | 61879 (6.8)                             | 1.57 (1.52-1.63)         | 0.79 (0.76-0.82)                       | 0.78 (0.75-0.81)                            |

*CI= confidence interval; IMD= Index of Multiple Deprivation; OR= odds ratio.*

**Supplementary table 7 Prevalence and odds ratio of mental health and neurological conditions in adults with atrial fibrillation compared to adults without atrial fibrillation.**

| Health condition                                                                       | Adults with AF, n (%)<br>(N=34,338) | Adults without AF, n (%)<br>(N=907,739) | Unadjusted OR<br>(95%CI) | OR adjusted for age and sex<br>(95%CI) | OR adjusted for age, sex and IMD (95%CI) |
|----------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|----------------------------------------|------------------------------------------|
| <b>Mental health</b>                                                                   |                                     |                                         |                          |                                        |                                          |
| Alcohol problems                                                                       | 2315 (6.7)                          | 35086 (3.9)                             | 1.80 (1.72-1.88)         | 1.38 (1.32-1.45)                       | 1.36 (1.29-1.42)                         |
| Anxiety disorders                                                                      | 5833 (17.0)                         | 141632 (15.6)                           | 1.11 (1.08-1.14)         | 1.02 (0.99-1.06)                       | 1.01 (0.98-1.04)                         |
| Autism and Asperger's syndrome                                                         | 32 (0.1)                            | 3055 (0.3)                              | 0.28 (0.19-0.38)         | 2.56 (1.76-3.60)                       | 2.54 (1.74-3.58)                         |
| Bipolar affective disorder and mania                                                   | 126 (0.4)                           | 3543 (0.4)                              | 0.94 (0.78-1.12)         | 0.79 (0.66-0.95)                       | 0.78 (0.64-0.93)                         |
| Delirium (not induced by alcohol and other psychoactive substances)                    | 275 (0.8)                           | 894 (0.1)                               | 8.19 (7.14-9.36)         | 2.28 (1.97-2.63)                       | 2.26 (1.95-2.61)                         |
| Dementia                                                                               | 3802 (11.1)                         | 12881 (1.4)                             | 8.65 (8.33-8.98)         | 1.38 (1.32-1.43)                       | 1.37 (1.32-1.43)                         |
| Depression                                                                             | 7373 (21.5)                         | 187762 (20.7)                           | 1.05 (1.02-1.08)         | 0.95 (0.92-0.98)                       | 0.93 (0.91-0.96)                         |
| Eating disorders                                                                       | 35 (0.1)                            | 3697 (0.4)                              | 0.25 (0.18-0.34)         | 0.67 (0.47-0.92)                       | 0.68 (0.47-0.93)                         |
| Hyperkinetic disorders                                                                 | 11 (0.0)                            | 2617 (0.3)                              | 0.11 (0.06-0.19)         | 2.14 (1.10-3.71)                       | 2.12 (1.09-3.67)                         |
| Intellectual disability                                                                | 179 (0.5)                           | 6542 (0.7)                              | 0.72 (0.62-0.83)         | 1.40 (1.19-1.63)                       | 1.35 (1.15-1.57)                         |
| Obsessive compulsive disorder                                                          | 113 (0.3)                           | 4981 (0.5)                              | 0.60 (0.49-0.72)         | 0.95 (0.78-1.14)                       | 0.94 (0.77-1.14)                         |
| Personality disorders                                                                  | 212 (0.6)                           | 5722 (0.6)                              | 0.98 (0.85-1.12)         | 1.03 (0.89-1.19)                       | 1.00 (0.86-1.15)                         |
| Schizophrenia, schizotypal and delusional disorders                                    | 242 (0.7)                           | 6455 (0.7)                              | 0.99 (0.87-1.12)         | 0.84 (0.73-0.95)                       | 0.81 (0.70-0.92)                         |
| Substance misuse                                                                       | 374 (1.1)                           | 14891 (1.6)                             | 0.66 (0.59-0.73)         | 1.01 (0.90-1.12)                       | 0.96 (0.86-1.07)                         |
| <b>Neurological</b>                                                                    |                                     |                                         |                          |                                        |                                          |
| Bell's palsy                                                                           | 594 (1.7)                           | 8300 (0.9)                              | 1.91 (1.75-2.07)         | 1.20 (1.09-1.30)                       | 1.19 (1.08-1.29)                         |
| Epilepsy                                                                               | 807 (2.4)                           | 14704 (1.6)                             | 1.46 (1.36-1.57)         | 1.43 (1.32-1.54)                       | 1.40 (1.30-1.51)                         |
| Essential tremor                                                                       | 395 (1.2)                           | 2820 (0.3)                              | 3.73 (3.35-4.15)         | 1.42 (1.26-1.58)                       | 1.42 (1.26-1.58)                         |
| Intracranial hypertension                                                              | 15 (0.0)                            | 725 (0.1)                               | 0.55 (0.31-0.88)         | 1.85 (1.04-3.04)                       | 1.78 (1.00-2.93)                         |
| Migraine                                                                               | 2468 (7.2)                          | 81173 (8.9)                             | 0.79 (0.76-0.82)         | 0.99 (0.95-1.03)                       | 0.99 (0.95-1.03)                         |
| Motor neurone disease                                                                  | 42 (0.1)                            | 327 (0.0)                               | 3.40 (2.43-4.63)         | 1.24 (0.88-1.73)                       | 1.24 (0.87-1.72)                         |
| Multiple sclerosis                                                                     | 123 (0.4)                           | 3080 (0.3)                              | 1.06 (0.88-1.26)         | 0.76 (0.63-0.91)                       | 0.76 (0.63-0.92)                         |
| Myasthenia gravis                                                                      | 52 (0.2)                            | 431 (0.0)                               | 3.19 (2.37-4.21)         | 1.36 (0.99-1.82)                       | 1.36 (0.99-1.83)                         |
| Parkinson's disease                                                                    | 656 (1.9)                           | 3378 (0.4)                              | 5.21 (4.79-5.67)         | 1.13 (1.03-1.23)                       | 1.13 (1.03-1.23)                         |
| Peripheral or autonomic neuropathy (excluding cranial nerve or carpal tunnel syndrome) | 2506 (7.3)                          | 23478 (2.6)                             | 2.97 (2.84-3.09)         | 1.30 (1.24-1.36)                       | 1.29 (1.23-1.35)                         |
| Subarachnoid haemorrhage                                                               | 165 (0.5)                           | 1547 (0.2)                              | 2.83 (2.40-3.31)         | 1.28 (1.07-1.51)                       | 1.27 (1.07-1.50)                         |
| Subdural haematoma (non-traumatic)                                                     | 307 (0.9)                           | 912 (0.1)                               | 8.97 (7.87-10.20)        | 2.28 (1.99-2.62)                       | 2.28 (1.98-2.61)                         |
| Trigeminal neuralgia                                                                   | 501 (1.5)                           | 6137 (0.7)                              | 2.18 (1.98-2.38)         | 0.99 (0.90-1.09)                       | 0.99 (0.90-1.09)                         |

CI= confidence interval; IMD= Index of Multiple Deprivation; OR= odds ratio.



**Supplementary table 8 Prevalence and odds ratio of respiratory, gastrointestinal and liver conditions in adults with atrial fibrillation compared to adults without atrial fibrillation.**

| Health condition                                                      | Adults with AF, n (%)<br>(N=34,338) | Adults without AF, n (%)<br>(N=907,739) | Unadjusted OR<br>(95%CI) | OR adjusted for age and sex<br>(95%CI) | OR adjusted for age, sex and IMD<br>(95%CI) |
|-----------------------------------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|----------------------------------------|---------------------------------------------|
| <b>Respiratory</b>                                                    |                                     |                                         |                          |                                        |                                             |
| Asbestosis                                                            | 271 (0.8)                           | 959 (0.1)                               | 7.52 (6.56-8.60)         | 1.47 (1.28-1.70)                       | 1.47 (1.27-1.69)                            |
| Asthma                                                                | 5037 (14.7)                         | 136691 (15.1)                           | 0.97 (0.94-1.00)         | 1.42 (1.37-1.46)                       | 1.41 (1.37-1.46)                            |
| Bronchiectasis                                                        | 1109 (3.2)                          | 5880 (0.6)                              | 5.12 (4.79-5.46)         | 1.60 (1.49-1.71)                       | 1.60 (1.49-1.71)                            |
| Chronic Obstructive Pulmonary Disease                                 | 3703 (10.8)                         | 22013 (2.4)                             | 4.86 (4.69-5.04)         | 1.39 (1.33-1.44)                       | 1.37 (1.32-1.43)                            |
| Cystic fibrosis                                                       | 13 (0.0)                            | 420 (0.0)                               | 0.82 (0.45-1.36)         | 0.93 (0.50-1.58)                       | 0.92 (0.50-1.57)                            |
| Other interstitial pulmonary diseases with fibrosis                   | 665 (1.9)                           | 2683 (0.3)                              | 6.66 (6.11-7.25)         | 1.60 (1.46-1.75)                       | 1.59 (1.45-1.74)                            |
| Pleural effusion                                                      | 5662 (16.5)                         | 15963 (1.8)                             | 11.03 (10.68-11.39)      | 3.55 (3.42-3.67)                       | 3.53 (3.41-3.66)                            |
| Pneumothorax                                                          | 250 (0.7)                           | 3761 (0.4)                              | 1.76 (1.55-2.00)         | 1.30 (1.13-1.49)                       | 1.30 (1.13-1.48)                            |
| Pulmonary collapse (excluding pneumothorax)                           | 1738 (5.1)                          | 8254 (0.9)                              | 5.81 (5.51-6.12)         | 2.12 (2.01-2.25)                       | 2.10 (1.99-2.23)                            |
| Pulmonary embolism                                                    | 1353 (3.9)                          | 6378 (0.7)                              | 5.80 (5.46-6.15)         | 2.24 (2.10-2.39)                       | 2.23 (2.09-2.37)                            |
| Pulmonary hypertension                                                | 1648 (4.8)                          | 1811 (0.2)                              | 25.22 (23.57-26.98)      | 8.61 (7.97-9.30)                       | 8.57 (7.93-9.26)                            |
| Sarcoidosis                                                           | 129 (0.4)                           | 1935 (0.2)                              | 1.77 (1.47-2.10)         | 0.88 (0.73-1.06)                       | 0.89 (0.74-1.07)                            |
| Sleep apnoea                                                          | 1358 (4.0)                          | 12132 (1.3)                             | 3.04 (2.87-3.22)         | 1.89 (1.78-2.01)                       | 1.88 (1.77-2.00)                            |
| <b>Gastrointestinal</b>                                               |                                     |                                         |                          |                                        |                                             |
| Abdominal hernia                                                      | 6437 (18.7)                         | 67596 (7.4)                             | 2.87 (2.79-2.95)         | 1.27 (1.23-1.31)                       | 1.27 (1.23-1.31)                            |
| Anal fissure                                                          | 1058 (3.1)                          | 26907 (3.0)                             | 1.04 (0.98-1.11)         | 1.11 (1.04-1.18)                       | 1.12 (1.05-1.20)                            |
| Angiodysplasia of colon                                               | 222 (0.6)                           | 915 (0.1)                               | 6.45 (5.55-7.45)         | 2.01 (1.71-2.35)                       | 2.00 (1.70-2.33)                            |
| Anorectal fistula                                                     | 382 (1.1)                           | 5909 (0.7)                              | 1.72 (1.54-1.90)         | 1.31 (1.18-1.46)                       | 1.31 (1.17-1.46)                            |
| Anorectal prolapse                                                    | 384 (1.1)                           | 3581 (0.4)                              | 2.86 (2.56-3.17)         | 1.20 (1.07-1.34)                       | 1.20 (1.08-1.34)                            |
| Appendicitis                                                          | 3766 (11)                           | 64683 (7.1)                             | 1.61 (1.55-1.66)         | 1.04 (1.00-1.07)                       | 1.04 (1.00-1.08)                            |
| Barrett's oesophagus                                                  | 886 (2.6)                           | 7324 (0.8)                              | 3.26 (3.03-3.49)         | 1.06 (0.99-1.15)                       | 1.06 (0.99-1.14)                            |
| Cholangitis                                                           | 546 (1.6)                           | 2287 (0.3)                              | 6.40 (5.82-7.02)         | 2.10 (1.89-2.32)                       | 2.08 (1.88-2.30)                            |
| Cholecystitis                                                         | 1742 (5.1)                          | 19378 (2.1)                             | 2.45 (2.33-2.58)         | 1.46 (1.39-1.54)                       | 1.45 (1.37-1.53)                            |
| Cholelithiasis                                                        | 2125 (6.2)                          | 24328 (2.7)                             | 2.40 (2.29-2.51)         | 1.26 (1.20-1.32)                       | 1.25 (1.19-1.31)                            |
| Coeliac disease                                                       | 219 (0.6)                           | 4134 (0.5)                              | 1.40 (1.22-1.60)         | 1.13 (0.98-1.30)                       | 1.13 (0.98-1.30)                            |
| Diverticular disease of intestine (acute and chronic)                 | 4716 (13.7)                         | 28765 (3.2)                             | 4.86 (4.71-5.03)         | 1.23 (1.19-1.27)                       | 1.23 (1.19-1.28)                            |
| Gastritis duodenitis and peptic ulcer disease                         | 4780 (13.9)                         | 56071 (6.2)                             | 2.46 (2.38-2.54)         | 1.26 (1.22-1.31)                       | 1.25 (1.21-1.29)                            |
| Gastro oesophageal reflux disease, oesophagitis and oesophageal ulcer | 8102 (23.6)                         | 109975 (12.1)                           | 2.24 (2.18-2.30)         | 1.08 (1.05-1.11)                       | 1.07 (1.04-1.10)                            |
| Inflammatory bowel disease                                            | 486 (1.4)                           | 8825 (1.0)                              | 1.46 (1.33-1.60)         | 1.03 (0.94-1.14)                       | 1.04 (0.94-1.14)                            |
| Irritable bowel syndrome                                              | 2587 (7.5)                          | 68710 (7.6)                             | 0.99 (0.95-1.04)         | 0.91 (0.87-0.95)                       | 0.92 (0.88-0.96)                            |
| Pancreatitis                                                          | 645 (1.9)                           | 5416 (0.6)                              | 3.19 (2.93-3.46)         | 1.62 (1.48-1.77)                       | 1.60 (1.47-1.75)                            |
| Pilonidal cyst sinus                                                  | 442 (1.3)                           | 11569 (1.3)                             | 1.01 (0.92-1.11)         | 1.19 (1.08-1.31)                       | 1.19 (1.07-1.31)                            |
| Volvulus                                                              | 195 (0.6)                           | 1312 (0.1)                              | 3.95 (3.38-4.58)         | 1.57 (1.33-1.84)                       | 1.56 (1.33-1.83)                            |
| <b>Liver disorders</b>                                                |                                     |                                         |                          |                                        |                                             |
| Alcoholic liver disease                                               | 154 (0.4)                           | 1615 (0.2)                              | 2.53 (2.13-2.97)         | 1.42 (1.18-1.68)                       | 1.39 (1.16-1.65)                            |
| Autoimmune liver disease                                              | 73 (0.2)                            | 763 (0.1)                               | 2.53 (1.97-3.20)         | 1.28 (0.98-1.63)                       | 1.27 (0.98-1.63)                            |
| Chronic viral hepatitis                                               | 43 (0.1)                            | 1808 (0.2)                              | 0.63 (0.46-0.84)         | 0.59 (0.43-0.80)                       | 0.58 (0.42-0.78)                            |
| Fatty liver                                                           | 644 (1.9)                           | 7536 (0.8)                              | 2.28 (2.10-2.47)         | 1.43 (1.32-1.56)                       | 1.42 (1.30-1.54)                            |
| Severe liver disease                                                  | 556 (1.6)                           | 4482 (0.5)                              | 3.32 (3.03-3.62)         | 1.79 (1.63-1.97)                       | 1.76 (1.60-1.93)                            |

CI= confidence interval; IMD= Index of Multiple Deprivation; OR= odds ratio.

**Supplementary table 9 Prevalence and odds ratio of orthopaedic and rheumatological conditions in adults with atrial fibrillation compared to adults without atrial fibrillation.**

| Health condition                                           | Adults with AF, n (%)<br>(N=34,338) | Adults without AF, n (%)<br>(N=907,739) | Unadjusted OR<br>(95%CI) | OR adjusted for age and sex<br>(95%CI) | OR adjusted for age, sex and IMD<br>(95%CI) |
|------------------------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|----------------------------------------|---------------------------------------------|
| <b>Orthopaedic</b>                                         |                                     |                                         |                          |                                        |                                             |
| Carpal tunnel syndrome                                     | 2986 (8.7)                          | 43020 (4.7)                             | 1.91 (1.84-1.99)         | 0.95 (0.91-0.99)                       | 0.95 (0.91-0.99)                            |
| Fracture of hip, wrist or vertebra                         | 4990 (14.5)                         | 45538 (5.0)                             | 3.22 (3.12-3.32)         | 1.64 (1.58-1.69)                       | 1.63 (1.58-1.69)                            |
| Intervertebral disc disorders                              | 1654 (4.8)                          | 24456 (2.7)                             | 1.83 (1.74-1.92)         | 0.90 (0.86-0.95)                       | 0.91 (0.86-0.96)                            |
| Osteoarthritis                                             | 15120 (44.0)                        | 126637 (14.0)                           | 4.85 (4.75-4.96)         | 1.12 (1.10-1.15)                       | 1.12 (1.09-1.15)                            |
| Osteoporosis                                               | 3505 (10.2)                         | 23274 (2.6)                             | 4.32 (4.16-4.48)         | 1.11 (1.06-1.15)                       | 1.11 (1.06-1.15)                            |
| Scoliosis                                                  | 348 (1.0)                           | 6045 (0.7)                              | 1.53 (1.37-1.70)         | 1.38 (1.23-1.55)                       | 1.39 (1.24-1.56)                            |
| Spinal stenosis                                            | 1362 (4.0)                          | 10513 (1.2)                             | 3.52 (3.33-3.73)         | 1.13 (1.07-1.20)                       | 1.13 (1.06-1.20)                            |
| Spondylolisthesis                                          | 494 (1.4)                           | 4764 (0.5)                              | 2.77 (2.52-3.03)         | 1.03 (0.93-1.13)                       | 1.03 (0.93-1.13)                            |
| <b>Rheumatological</b>                                     |                                     |                                         |                          |                                        |                                             |
| Ankylosing spondylitis                                     | 174 (0.5)                           | 2291 (0.3)                              | 2.01 (1.72-2.34)         | 1.09 (0.92-1.27)                       | 1.08 (0.92-1.27)                            |
| Enteropathic arthropathy                                   | 5 (0.0)                             | 143 (0.0)                               | 0.92 (0.33-2.03)         | 0.95 (0.33-2.16)                       | 0.93 (0.32-2.13)                            |
| Enthesopathies synovial disorders                          | 12801 (37.3)                        | 207303 (22.8)                           | 2.01 (1.96-2.05)         | 0.85 (0.83-0.87)                       | 0.85 (0.83-0.87)                            |
| Giant cell arteritis                                       | 329 (1.0)                           | 1641 (0.2)                              | 5.34 (4.74-6.01)         | 1.33 (1.17-1.51)                       | 1.33 (1.17-1.50)                            |
| Gout                                                       | 4734 (13.8)                         | 28155 (3.1)                             | 5.00 (4.83-5.16)         | 1.65 (1.59-1.71)                       | 1.65 (1.59-1.71)                            |
| Juvenile arthritis                                         | 5 (0.0)                             | 541 (0.1)                               | 0.24 (0.09-0.53)         | 0.76 (0.27-1.67)                       | 0.76 (0.27-1.68)                            |
| Lupus erythematosus local and systemic                     | 86 (0.3)                            | 1433 (0.2)                              | 1.59 (1.27-1.96)         | 1.08 (0.86-1.35)                       | 1.07 (0.85-1.34)                            |
| Polymyalgia rheumatica                                     | 1572 (4.6)                          | 7802 (0.9)                              | 5.53 (5.23-5.85)         | 1.22 (1.15-1.29)                       | 1.22 (1.15-1.29)                            |
| Post-infective and reactive arthropathies                  | 52 (0.2)                            | 1089 (0.1)                              | 1.26 (0.94-1.65)         | 0.98 (0.73-1.30)                       | 1.00 (0.74-1.32)                            |
| Post-viral fatigue syndrome, neurasthenia and fibromyalgia | 733 (2.1)                           | 17949 (2.0)                             | 1.08 (1.00-1.16)         | 0.87 (0.80-0.94)                       | 0.85 (0.79-0.92)                            |
| Psoriatic arthropathy                                      | 150 (0.4)                           | 3047 (0.3)                              | 1.30 (1.10-1.53)         | 0.79 (0.67-0.94)                       | 0.79 (0.67-0.94)                            |
| Raynaud's syndrome                                         | 765 (2.2)                           | 11810 (1.3)                             | 1.73 (1.60-1.86)         | 1.29 (1.19-1.39)                       | 1.29 (1.19-1.39)                            |
| Rheumatoid arthritis                                       | 830 (2.4)                           | 7741 (0.9)                              | 2.88 (2.68-3.09)         | 1.25 (1.16-1.35)                       | 1.24 (1.15-1.34)                            |
| Sjogren's disease                                          | 112 (0.3)                           | 1251 (0.1)                              | 2.37 (1.94-2.86)         | 1.08 (0.88-1.31)                       | 1.08 (0.88-1.31)                            |
| Systemic sclerosis                                         | 26 (0.1)                            | 352 (0.0)                               | 1.95 (1.28-2.85)         | 1.02 (0.66-1.52)                       | 1.02 (0.66-1.52)                            |

CI= confidence interval; IMD= Index of Multiple Deprivation; OR= odds ratio.

**Supplementary table 10 Prevalence and odds ratio of genitourinary, gynaecological and renal conditions in adults with atrial fibrillation compared to adults without atrial fibrillation.**

| Health condition                        | Adults with AF, n (%)<br>(N=34,338) | Adults without AF, n (%)<br>(N=907,739) | Unadjusted OR<br>(95%CI) | OR adjusted for age and sex (95%CI) | OR adjusted for age, sex and IMD (95%CI) |
|-----------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|-------------------------------------|------------------------------------------|
| <b>Genitourinary disorder</b>           |                                     |                                         |                          |                                     |                                          |
| Erectile dysfunction                    | 4890 (14.2)                         | 48404 (5.3)                             | 2.95 (2.86-3.04)         | 1.01 (0.97-1.05)                    | 1.01 (0.97-1.04)                         |
| Hydrocoele (including infected)         | 760 (2.2)                           | 9146 (1.0)                              | 2.22 (2.06-2.39)         | 1.56 (1.44-1.69)                    | 1.56 (1.44-1.69)                         |
| Hyperplasia of prostate                 | 6195 (18.0)                         | 32634 (3.6)                             | 5.90 (5.73-6.08)         | 1.16 (1.12-1.21)                    | 1.17 (1.12-1.21)                         |
| Neuromuscular dysfunction of bladder    | 848 (2.5)                           | 9462 (1.0)                              | 2.40 (2.24-2.58)         | 1.12 (1.04-1.20)                    | 1.11 (1.03-1.20)                         |
| Non acute cystitis                      | 285 (0.8)                           | 2527 (0.3)                              | 3.00 (2.65-3.38)         | 1.27 (1.11-1.44)                    | 1.27 (1.11-1.44)                         |
| Obstructive and reflux uropathy         | 993 (2.9)                           | 9877 (1.1)                              | 2.71 (2.53-2.89)         | 1.47 (1.37-1.58)                    | 1.46 (1.36-1.57)                         |
| Urinary incontinence                    | 3224 (9.4)                          | 40822 (4.5)                             | 2.20 (2.12-2.28)         | 1.19 (1.14-1.24)                    | 1.18 (1.13-1.23)                         |
| Urolithiasis                            | 2408 (7.0)                          | 34905 (3.8)                             | 1.89 (1.81-1.97)         | 0.96 (0.92-1.01)                    | 0.96 (0.92-1.00)                         |
| <b>Gynaecological</b>                   |                                     |                                         |                          |                                     |                                          |
| Cervical intraepithelial neoplasia      | 129 (0.4)                           | 9264 (1.0)                              | 0.37 (0.31-0.43)         | 0.56 (0.47-0.67)                    | 0.55 (0.46-0.66)                         |
| Dysmenorrhoea                           | 280 (0.8)                           | 36114 (4.0)                             | 0.20 (0.18-0.22)         | 0.57 (0.50-0.64)                    | 0.56 (0.50-0.63)                         |
| Endometrial hyperplasia and hypertrophy | 209 (0.6)                           | 5037 (0.6)                              | 1.10 (0.95-1.26)         | 0.81 (0.70-0.94)                    | 0.81 (0.70-0.93)                         |
| Endometriosis                           | 162 (0.5)                           | 9890 (1.1)                              | 0.43 (0.37-0.50)         | 0.58 (0.49-0.68)                    | 0.59 (0.50-0.69)                         |
| Female genital prolapse                 | 2090 (6.1)                          | 25545 (2.8)                             | 2.24 (2.14-2.34)         | 0.86 (0.82-0.90)                    | 0.86 (0.82-0.91)                         |
| Female pelvic inflammatory disease      | 58 (0.2)                            | 2654 (0.3)                              | 0.58 (0.44-0.74)         | 0.61 (0.47-0.79)                    | 0.60 (0.46-0.79)                         |
| Menorrhagia and polymenorrhoea          | 1378 (4.0)                          | 87273 (9.6)                             | 0.39 (0.37-0.41)         | 0.51 (0.48-0.54)                    | 0.50 (0.47-0.53)                         |
| Polycystic ovarian syndrome             | 30 (0.1)                            | 7090 (0.8)                              | 0.11 (0.08-0.16)         | 0.77 (0.52-1.09)                    | 0.77 (0.52-1.08)                         |
| Postmenopausal bleeding                 | 1733 (5.0)                          | 22151 (2.4)                             | 2.12 (2.02-2.23)         | 0.82 (0.77-0.86)                    | 0.82 (0.78-0.86)                         |
| <b>Renal</b>                            |                                     |                                         |                          |                                     |                                          |
| Acute kidney injury                     | 8159 (23.8)                         | 25371 (2.8)                             | 10.84 (10.54-11.14)      | 2.76 (2.68-2.85)                    | 2.76 (2.68-2.85)                         |
| Chronic kidney disease                  | 13924 (40.5)                        | 70064 (7.7)                             | 8.15 (7.97-8.34)         | 1.92 (1.87-1.97)                    | 1.91 (1.86-1.96)                         |
| End stage renal disease                 | 4261 (12.4)                         | 32708 (3.6)                             | 3.79 (3.66-3.92)         | 1.26 (1.21-1.30)                    | 1.25 (1.21-1.30)                         |
| Glomerulonephritis                      | 787 (2.3)                           | 4461 (0.5)                              | 4.75 (4.40-5.12)         | 2.16 (1.99-2.35)                    | 2.15 (1.98-2.33)                         |
| Tubulointerstitial nephritis            | 277 (0.8)                           | 4577 (0.5)                              | 1.60 (1.42-1.81)         | 2.57 (2.25-2.92)                    | 2.51 (2.19-2.85)                         |

CI= confidence interval; IMD= Index of Multiple Deprivation; OR= odds ratio.

**Supplementary table 11 Prevalence and odds ratio of ear, nose and throat conditions, eye conditions, dermatological conditions and Down's syndrome in adults with atrial fibrillation compared to adults without atrial fibrillation.**

| Health condition                                | Adults with AF, n (%)<br>(N=34,338) | Adults without AF, n (%)<br>(N=907,739) | Unadjusted OR<br>(95%CI) | OR adjusted for age and sex<br>(95%CI) | OR adjusted for age, sex and IMD<br>(95%CI) |
|-------------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|----------------------------------------|---------------------------------------------|
| <b>Ear nose and throat disorder</b>             |                                     |                                         |                          |                                        |                                             |
| Allergic and chronic rhinitis                   | 5701 (16.6)                         | 159976 (17.6)                           | 0.93 (0.90-0.96)         | 1.10 (1.07-1.14)                       | 1.11 (1.08-1.14)                            |
| Chronic sinusitis                               | 2844 (8.3)                          | 61251 (6.7)                             | 1.25 (1.20-1.30)         | 0.83 (0.79-0.86)                       | 0.83 (0.80-0.87)                            |
| Hearing loss                                    | 8079 (23.5)                         | 82363 (9.1)                             | 3.08 (3.00-3.16)         | 1.33 (1.30-1.37)                       | 1.33 (1.29-1.37)                            |
| Hypertrophy of nasal turbinates                 | 113 (0.3)                           | 4700 (0.5)                              | 0.63 (0.52-0.76)         | 0.82 (0.67-0.99)                       | 0.81 (0.67-0.98)                            |
| Meniere's disease                               | 420 (1.2)                           | 3651 (0.4)                              | 3.07 (2.77-3.39)         | 1.09 (0.98-1.21)                       | 1.09 (0.97-1.21)                            |
| Tinnitus                                        | 2792 (8.1)                          | 36126 (4.0)                             | 2.14 (2.05-2.22)         | 0.97 (0.93-1.01)                       | 0.97 (0.93-1.01)                            |
| <b>Eye disorder</b>                             |                                     |                                         |                          |                                        |                                             |
| Anterior and intermediate uveitis               | 527 (1.5)                           | 7348 (0.8)                              | 1.91 (1.75-2.09)         | 1.00 (0.91-1.09)                       | 1.00 (0.91-1.10)                            |
| Blindness                                       | 1274 (3.7)                          | 7746 (0.9)                              | 4.48 (4.21-4.75)         | 1.54 (1.44-1.64)                       | 1.53 (1.43-1.63)                            |
| Cataract                                        | 11649 (33.9)                        | 63595 (7.0)                             | 6.82 (6.65-6.98)         | 1.29 (1.25-1.32)                       | 1.29 (1.25-1.32)                            |
| Diabetic ophthalmic complications               | 2777 (8.1)                          | 18902 (2.1)                             | 4.14 (3.97-4.31)         | 1.40 (1.34-1.46)                       | 1.39 (1.33-1.45)                            |
| Eye infections                                  | 84 (0.2)                            | 614 (0.1)                               | 3.62 (2.86-4.52)         | 2.12 (1.65-2.70)                       | 2.10 (1.63-2.67)                            |
| Glaucoma                                        | 3863 (11.2)                         | 25352 (2.8)                             | 4.41 (4.26-4.57)         | 0.98 (0.94-1.02)                       | 0.98 (0.94-1.02)                            |
| Keratitis                                       | 335 (1.0)                           | 5152 (0.6)                              | 1.73 (1.54-1.93)         | 1.14 (1.02-1.28)                       | 1.15 (1.02-1.29)                            |
| Macular degeneration                            | 2920 (8.5)                          | 13645 (1.5)                             | 6.09 (5.84-6.35)         | 1.17 (1.12-1.22)                       | 1.17 (1.12-1.22)                            |
| Posterior uveitis                               | 41 (0.1)                            | 604 (0.1)                               | 1.80 (1.29-2.43)         | 1.00 (0.71-1.37)                       | 1.00 (0.71-1.37)                            |
| Ptosis of eyelid                                | 906 (2.6)                           | 6612 (0.7)                              | 3.69 (3.44-3.96)         | 1.35 (1.25-1.45)                       | 1.35 (1.25-1.45)                            |
| Retinal detachments and breaks                  | 651 (1.9)                           | 6507 (0.7)                              | 2.68 (2.47-2.90)         | 1.06 (0.97-1.15)                       | 1.06 (0.98-1.16)                            |
| Retinal vascular occlusions                     | 623 (1.8)                           | 3048 (0.3)                              | 5.48 (5.02-5.98)         | 1.30 (1.19-1.43)                       | 1.30 (1.19-1.43)                            |
| Scleritis and episcleritis                      | 256 (0.7)                           | 5080 (0.6)                              | 1.33 (1.17-1.51)         | 0.83 (0.73-0.95)                       | 0.84 (0.74-0.96)                            |
| <b>Dermatological</b>                           |                                     |                                         |                          |                                        |                                             |
| Acne                                            | 561 (1.6)                           | 84477 (9.3)                             | 0.16 (0.15-0.18)         | 0.86 (0.79-0.93)                       | 0.87 (0.80-0.95)                            |
| Actinic keratosis                               | 3914 (11.4)                         | 25981 (2.9)                             | 4.37 (4.21-4.52)         | 1.02 (0.98-1.06)                       | 1.03 (0.99-1.07)                            |
| Alopecia areata                                 | 124 (0.4)                           | 4512 (0.5)                              | 0.73 (0.60-0.86)         | 0.85 (0.71-1.02)                       | 0.85 (0.71-1.02)                            |
| Dermatitis (atopic/ contact/ other unspecified) | 10629 (31.0)                        | 235761 (26.0)                           | 1.28 (1.25-1.31)         | 1.34 (1.31-1.38)                       | 1.35 (1.31-1.38)                            |
| Hidradenitis suppurativa                        | 81 (0.2)                            | 3726 (0.4)                              | 0.57 (0.46-0.71)         | 0.99 (0.78-1.23)                       | 0.97 (0.76-1.20)                            |
| Lichen planus                                   | 488 (1.4)                           | 6423 (0.7)                              | 2.02 (1.84-2.22)         | 0.90 (0.81-0.99)                       | 0.90 (0.82-0.99)                            |
| Psoriasis                                       | 1974 (5.7)                          | 38669 (4.3)                             | 1.37 (1.31-1.44)         | 1.03 (0.98-1.08)                       | 1.02 (0.98-1.08)                            |
| Rosacea                                         | 1512 (4.4)                          | 29680 (3.3)                             | 1.36 (1.29-1.44)         | 0.91 (0.86-0.96)                       | 0.92 (0.87-0.97)                            |
| Seborrheic dermatitis                           | 2551 (7.4)                          | 48404 (5.3)                             | 1.42 (1.37-1.48)         | 1.22 (1.16-1.27)                       | 1.22 (1.17-1.27)                            |
| Urticaria                                       | 1931 (5.6)                          | 52277 (5.8)                             | 0.98 (0.93-1.02)         | 1.17 (1.12-1.23)                       | 1.18 (1.12-1.23)                            |
| Vitiligo                                        | 134 (0.4)                           | 3991 (0.4)                              | 0.89 (0.74-1.05)         | 0.86 (0.72-1.03)                       | 0.87 (0.72-1.03)                            |
| <b>Other</b>                                    |                                     |                                         |                          |                                        |                                             |
| Down's syndrome                                 | 5 (0.0)                             | 604 (0.1)                               | 0.22 (0.08-0.47)         | 0.52 (0.19-1.15)                       | 0.52 (0.18-1.13)                            |

CI= confidence interval; IMD= Index of Multiple Deprivation; OR= odds ratio.

**Supplementary table 12 Prevalence and odds ratio of haematological conditions in adults with atrial fibrillation compared to adults without atrial fibrillation.**

| Health condition                                          | Adults with AF, n (%)<br>(N=34,338) | Adults without AF, n (%)<br>(N=907,739) | Unadjusted OR<br>(95%CI) | OR adjusted for age and sex<br>(95%CI) | OR adjusted for age, sex and IMD (95%CI) |
|-----------------------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|----------------------------------------|------------------------------------------|
| <b>Haematological</b>                                     |                                     |                                         |                          |                                        |                                          |
| Agranulocytosis                                           | 567 (1.7)                           | 6591 (0.7)                              | 2.30 (2.10-2.50)         | 1.36 (1.24-1.49)                       | 1.36 (1.24-1.49)                         |
| Aplastic anaemias                                         | 54 (0.2)                            | 342 (0.0)                               | 4.18 (3.10-5.52)         | 2.07 (1.51-2.81)                       | 2.07 (1.51-2.80)                         |
| Folate deficiency anaemia                                 | 429 (1.2)                           | 4004 (0.4)                              | 2.86 (2.58-3.15)         | 1.68 (1.51-1.87)                       | 1.63 (1.46-1.81)                         |
| Hyposplenism                                              | 186 (0.5)                           | 1513 (0.2)                              | 3.26 (2.79-3.79)         | 1.83 (1.55-2.15)                       | 1.83 (1.55-2.15)                         |
| Immunodeficiencies                                        | 34 (0.1)                            | 372 (0.0)                               | 2.42 (1.67-3.38)         | 2.75 (1.85-3.98)                       | 2.80 (1.88-4.05)                         |
| Iron deficiency anaemia                                   | 2790 (8.1)                          | 32913 (3.6)                             | 2.35 (2.26-2.45)         | 1.80 (1.73-1.88)                       | 1.78 (1.71-1.86)                         |
| Monoclonal gammopathy of undetermined significance (MGUS) | 276 (0.8)                           | 1267 (0.1)                              | 5.80 (5.08-6.59)         | 1.36 (1.18-1.56)                       | 1.36 (1.19-1.56)                         |
| Other anaemias                                            | 4236 (12.3)                         | 39490 (4.4)                             | 3.09 (2.99-3.20)         | 1.91 (1.84-1.98)                       | 1.89 (1.82-1.96)                         |
| Other haemolytic anaemias                                 | 56 (0.2)                            | 786 (0.1)                               | 1.88 (1.42-2.45)         | 2.01 (1.49-2.66)                       | 2.01 (1.49-2.66)                         |
| Secondary polycythaemia                                   | 179 (0.5)                           | 1263 (0.1)                              | 3.76 (3.20-4.39)         | 1.73 (1.46-2.04)                       | 1.71 (1.44-2.02)                         |
| Sickle cell anaemia                                       | 11 (0.0)                            | 363 (0.0)                               | 0.80 (0.41-1.39)         | 1.27 (0.64-2.26)                       | 1.19 (0.60-2.13)                         |
| Splenomegaly                                              | 210 (0.6)                           | 1909 (0.2)                              | 2.92 (2.52-3.36)         | 2.15 (1.84-2.51)                       | 2.13 (1.82-2.48)                         |
| Thalassaemia                                              | 38 (0.1)                            | 1074 (0.1)                              | 0.94 (0.67-1.27)         | 1.11 (0.78-1.53)                       | 1.10 (0.77-1.52)                         |
| Thrombocytopaenia                                         | 897 (2.6)                           | 5818 (0.6)                              | 4.16 (3.87-4.46)         | 2.42 (2.24-2.61)                       | 2.41 (2.23-2.60)                         |
| Thrombophilia                                             | 90 (0.3)                            | 1785 (0.2)                              | 1.33 (1.07-1.64)         | 1.77 (1.41-2.20)                       | 1.79 (1.42-2.23)                         |
| Venous thromboembolism (excluding pulmonary embolism)     | 2162 (6.3)                          | 14896 (1.6)                             | 4.03 (3.84-4.22)         | 1.59 (1.51-1.67)                       | 1.58 (1.50-1.66)                         |
| Vitamin B12 deficiency anaemia                            | 1630 (4.7)                          | 15061 (1.7)                             | 2.95 (2.80-3.11)         | 1.39 (1.31-1.47)                       | 1.37 (1.30-1.45)                         |

*CI= confidence interval; IMD= Index of Multiple Deprivation; OR= odds ratio.*

**Supplementary table 13 Prevalence and odds ratio of benign neoplasms, primary dermatological, haematological and solid organ malignancies, and secondary malignancies, in adults with atrial fibrillation compared to adults without atrial fibrillation.**

| Health condition                                                        | Adults with AF, n (%)<br>(N=34,338) | Adults without AF, n (%)<br>(N=907,739) | Unadjusted OR<br>(95%CI) | OR adjusted for age and sex<br>(95%CI) | OR adjusted for age, sex and IMD (95%CI) |
|-------------------------------------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|----------------------------------------|------------------------------------------|
| <b>Benign neoplasm</b>                                                  |                                     |                                         |                          |                                        |                                          |
| Benign neoplasm and polyp of uterus                                     | 569 (1.7)                           | 12062 (1.3)                             | 1.25 (1.15-1.36)         | 0.77 (0.71-0.84)                       | 0.78 (0.71-0.85)                         |
| Benign neoplasm of brain and other parts of central nervous system      | 198 (0.6)                           | 2356 (0.3)                              | 2.23 (1.92-2.57)         | 1.11 (0.95-1.29)                       | 1.12 (0.96-1.30)                         |
| Benign neoplasm of colon rectum anus and anal canal                     | 3432 (10.0)                         | 32216 (3.5)                             | 3.02 (2.91-3.13)         | 1.15 (1.11-1.20)                       | 1.15 (1.11-1.20)                         |
| Benign neoplasm of ovary                                                | 691 (2.0)                           | 25460 (2.8)                             | 0.71 (0.66-0.77)         | 0.83 (0.77-0.90)                       | 0.83 (0.77-0.90)                         |
| Benign neoplasm of stomach and duodenum                                 | 1050 (3.1)                          | 8562 (0.9)                              | 3.31 (3.10-3.53)         | 1.16 (1.08-1.24)                       | 1.16 (1.08-1.24)                         |
| Fibromatoses                                                            | 1334 (3.9)                          | 11283 (1.2)                             | 3.21 (3.03-3.40)         | 0.91 (0.86-0.97)                       | 0.91 (0.86-0.97)                         |
| Haemangioma any site                                                    | 686 (2.0)                           | 13684 (1.5)                             | 1.33 (1.23-1.44)         | 1.07 (0.99-1.16)                       | 1.09 (1.00-1.18)                         |
| Leiomyoma of uterus                                                     | 469 (1.4)                           | 15984 (1.8)                             | 0.77 (0.70-0.85)         | 0.54 (0.49-0.59)                       | 0.54 (0.49-0.59)                         |
| Nasal polyp                                                             | 815 (2.4)                           | 10102 (1.1)                             | 2.16 (2.01-2.32)         | 1.05 (0.98-1.14)                       | 1.06 (0.98-1.14)                         |
| <b>Primary dermatological malignancy</b>                                |                                     |                                         |                          |                                        |                                          |
| Primary malignancy malignant melanoma                                   | 456 (1.3)                           | 4951 (0.5)                              | 2.45 (2.23-2.70)         | 0.96 (0.87-1.06)                       | 0.97 (0.88-1.08)                         |
| Primary malignancy other skin and subcutaneous tissue                   | 3877 (11.3)                         | 24299 (2.7)                             | 4.63 (4.46-4.80)         | 1.10 (1.06-1.15)                       | 1.11 (1.07-1.15)                         |
| <b>Primary haematological malignancy</b>                                |                                     |                                         |                          |                                        |                                          |
| Hodgkin lymphoma                                                        | 47 (0.1)                            | 628 (0.1)                               | 1.98 (1.45-2.63)         | 1.65 (1.19-2.24)                       | 1.67 (1.20-2.26)                         |
| Leukaemia                                                               | 193 (0.6)                           | 1442 (0.2)                              | 3.55 (3.05-4.12)         | 1.37 (1.16-1.60)                       | 1.37 (1.16-1.60)                         |
| Multiple myeloma and malignant plasma cell neoplasms                    | 98 (0.3)                            | 509 (0.1)                               | 5.10 (4.09-6.30)         | 1.42 (1.12-1.77)                       | 1.42 (1.12-1.77)                         |
| Myelodysplastic syndromes                                               | 118 (0.3)                           | 372 (0.0)                               | 8.41 (6.81-10.31)        | 1.97 (1.58-2.45)                       | 1.97 (1.58-2.45)                         |
| Non-Hodgkin lymphoma                                                    | 254 (0.7)                           | 1980 (0.2)                              | 3.41 (2.98-3.88)         | 1.23 (1.07-1.41)                       | 1.23 (1.07-1.41)                         |
| Polycythaemia vera                                                      | 160 (0.5)                           | 1029 (0.1)                              | 4.13 (3.48-4.86)         | 1.67 (1.39-1.99)                       | 1.66 (1.38-1.98)                         |
| <b>Primary solid organ malignancy</b>                                   |                                     |                                         |                          |                                        |                                          |
| Primary malignancy biliary tract                                        | 36 (0.1)                            | 274 (0.0)                               | 3.48 (2.41-4.85)         | 1.04 (0.71-1.47)                       | 1.04 (0.71-1.47)                         |
| Primary malignancy bladder                                              | 386 (1.1)                           | 1878 (0.2)                              | 5.48 (4.91-6.11)         | 1.16 (1.03-1.30)                       | 1.16 (1.03-1.30)                         |
| Primary malignancy bone and articular cartilage                         | 18 (0.1)                            | 195 (0.0)                               | 2.44 (1.45-3.84)         | 2.04 (1.18-3.34)                       | 2.04 (1.18-3.35)                         |
| Primary malignancy brain, other central nervous system and intracranial | 22 (0.1)                            | 418 (0.0)                               | 1.39 (0.88-2.08)         | 1.39 (0.86-2.13)                       | 1.39 (0.86-2.14)                         |
| Primary malignancy breast                                               | 1045 (3.0)                          | 12959 (1.4)                             | 2.17 (2.03-2.31)         | 0.84 (0.78-0.90)                       | 0.84 (0.79-0.90)                         |
| Primary malignancy cervical                                             | 34 (0.1)                            | 791 (0.1)                               | 1.14 (0.79-1.58)         | 0.73 (0.51-1.03)                       | 0.72 (0.49-1.01)                         |
| Primary malignancy colorectal and anus                                  | 962 (2.8)                           | 5598 (0.6)                              | 4.64 (4.33-4.98)         | 1.15 (1.07-1.24)                       | 1.15 (1.07-1.24)                         |
| Primary malignancy kidney and ureter                                    | 280 (0.8)                           | 1861 (0.2)                              | 4.00 (3.52-4.53)         | 1.23 (1.08-1.41)                       | 1.23 (1.08-1.40)                         |
| Primary malignancy liver                                                | 51 (0.1)                            | 388 (0.0)                               | 3.48 (2.57-4.61)         | 1.07 (0.78-1.45)                       | 1.07 (0.78-1.44)                         |
| Primary malignancy lung and trachea                                     | 198 (0.6)                           | 993 (0.1)                               | 5.30 (4.53-6.16)         | 1.47 (1.25-1.73)                       | 1.46 (1.24-1.71)                         |
| Primary malignancy mesothelioma                                         | <5                                  | <5                                      | NA (NA-NA)               | NA (NA-NA)                             | NA (NA-NA)                               |
| Primary malignancy oesophageal                                          | 106 (0.3)                           | 355 (0.0)                               | 7.91 (6.34-9.80)         | 2.14 (1.69-2.70)                       | 2.14 (1.69-2.69)                         |
| Primary malignancy oropharyngeal                                        | 137 (0.4)                           | 1211 (0.1)                              | 3.00 (2.50-3.56)         | 1.07 (0.88-1.28)                       | 1.06 (0.88-1.27)                         |
| Primary malignancy other                                                | 535 (1.6)                           | 3589 (0.4)                              | 3.99 (3.63-4.36)         | 1.29 (1.17-1.42)                       | 1.29 (1.17-1.42)                         |
| Primary malignancy ovarian                                              | 120 (0.3)                           | 1575 (0.2)                              | 2.02 (1.67-2.42)         | 0.96 (0.79-1.16)                       | 0.96 (0.79-1.16)                         |
| Primary malignancy pancreatic                                           | 29 (0.1)                            | 129 (0.0)                               | 5.95 (3.90-8.76)         | 1.73 (1.11-2.62)                       | 1.73 (1.11-2.61)                         |
| Primary malignancy prostate                                             | 1665 (4.8)                          | 9881 (1.1)                              | 4.63 (4.39-4.88)         | 0.89 (0.84-0.94)                       | 0.89 (0.84-0.95)                         |
| Primary malignancy stomach                                              | 49 (0.1)                            | 200 (0.0)                               | 6.48 (4.69-8.78)         | 1.63 (1.16-2.25)                       | 1.63 (1.16-2.25)                         |
| Primary malignancy testicular                                           | 35 (0.1)                            | 785 (0.1)                               | 1.18 (0.82-1.63)         | 0.87 (0.60-1.22)                       | 0.88 (0.61-1.23)                         |
| Primary malignancy thyroid                                              | 67 (0.2)                            | 922 (0.1)                               | 1.92 (1.49-2.44)         | 1.35 (1.03-1.74)                       | 1.35 (1.03-1.74)                         |
| Primary malignancy uterine                                              | 145 (0.4)                           | 1237 (0.1)                              | 3.11 (2.61-3.68)         | 1.04 (0.87-1.25)                       | 1.04 (0.87-1.24)                         |

**Supplementary table 13 (continued).**

| Health condition                                    | Adults with AF, n (%)<br>(N=34,338) | Adults without AF, n (%)<br>(N=907,739) | Unadjusted OR<br>(95%CI) | OR adjusted for age and sex<br>(95%CI) | OR adjusted for age, sex and IMD<br>(95%CI) |
|-----------------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|----------------------------------------|---------------------------------------------|
| <b>Secondary malignancy</b>                         |                                     |                                         |                          |                                        |                                             |
| Secondary malignancy adrenal gland                  | 41 (0.1)                            | 492 (0.1)                               | 2.20 (1.58-2.99)         | 0.68 (0.48-0.93)                       | 0.67 (0.48-0.92)                            |
| Secondary malignancy bone                           | 468 (1.4)                           | 3375 (0.4)                              | 3.70 (3.36-4.08)         | 1.07 (0.97-1.19)                       | 1.07 (0.97-1.19)                            |
| Secondary malignancy bowel                          | 37 (0.1)                            | 293 (0.0)                               | 3.34 (2.33-4.64)         | 1.24 (0.85-1.76)                       | 1.24 (0.85-1.75)                            |
| Secondary malignancy brain, central nervous system  | 84 (0.2)                            | 969 (0.1)                               | 2.29 (1.82-2.85)         | 0.88 (0.69-1.10)                       | 0.87 (0.69-1.09)                            |
| Secondary malignancy liver bile duct                | 391 (1.1)                           | 3576 (0.4)                              | 2.91 (2.62-3.23)         | 0.94 (0.84-1.04)                       | 0.93 (0.84-1.04)                            |
| Secondary malignancy lung                           | 310 (0.9)                           | 2664 (0.3)                              | 3.10 (2.75-3.48)         | 1.04 (0.92-1.17)                       | 1.04 (0.91-1.17)                            |
| Secondary malignancy lymph nodes                    | 18 (0.1)                            | 228 (0.0)                               | 2.09 (1.25-3.27)         | 0.82 (0.49-1.32)                       | 0.83 (0.49-1.33)                            |
| Secondary malignancy other organs                   | 395 (1.2)                           | 3147 (0.3)                              | 3.35 (3.01-3.71)         | 1.14 (1.02-1.27)                       | 1.14 (1.02-1.27)                            |
| Secondary malignancy pleura                         | 86 (0.3)                            | 696 (0.1)                               | 3.27 (2.60-4.07)         | 1.11 (0.87-1.39)                       | 1.11 (0.87-1.39)                            |
| Secondary malignancy retroperitoneum and peritoneum | 148 (0.4)                           | 1592 (0.2)                              | 2.46 (2.07-2.91)         | 0.94 (0.78-1.12)                       | 0.94 (0.78-1.11)                            |

CI= confidence interval; IMD= Index of Multiple Deprivation; OR= odds ratio.

**Supplementary table 14 Prevalence and odds ratio of infectious diseases in adults with atrial fibrillation compared to adults without atrial fibrillation.**

| Health condition                                       | Adults with AF, n (%)<br>(N=34,338) | Adults without AF, n (%)<br>(N=907,739) | Unadjusted OR<br>(95%CI) | OR adjusted for age and sex<br>(95%CI) | OR adjusted for age, sex and IMD<br>(95%CI) |
|--------------------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|----------------------------------------|---------------------------------------------|
| Aspiration pneumonitis                                 | 1285 (3.7)                          | 4015 (0.4)                              | 8.75 (8.21-9.32)         | 2.26 (2.11-2.42)                       | 2.25 (2.10-2.41)                            |
| Bacterial diseases<br>(excluding tuberculosis)         | 9139 (26.6)                         | 53800 (5.9)                             | 5.76 (5.61-5.90)         | 2.64 (2.57-2.71)                       | 2.62 (2.55-2.70)                            |
| Ear and upper respiratory tract infections             | 125 (0.4)                           | 3863 (0.4)                              | 0.85 (0.71-1.02)         | 1.63 (1.34-1.95)                       | 1.61 (1.33-1.93)                            |
| Human immunodeficiency virus (HIV)                     | 12 (0.0)                            | 952 (0.1)                               | 0.33 (0.18-0.56)         | 0.39 (0.21-0.66)                       | 0.37 (0.20-0.64)                            |
| Infection of anal and rectal regions                   | 15 (0.0)                            | 559 (0.1)                               | 0.71 (0.41-1.14)         | 1.09 (0.62-1.80)                       | 1.06 (0.60-1.75)                            |
| Infection of bones and joints                          | 94 (0.3)                            | 530 (0.1)                               | 4.70 (3.75-5.82)         | 2.18 (1.71-2.75)                       | 2.15 (1.69-2.72)                            |
| Infection of liver                                     | 61 (0.2)                            | 413 (0.0)                               | 3.91 (2.96-5.07)         | 1.50 (1.12-1.98)                       | 1.48 (1.10-1.95)                            |
| Infection of male genital system                       | 126 (0.4)                           | 1157 (0.1)                              | 2.89 (2.39-3.45)         | 1.79 (1.46-2.17)                       | 1.77 (1.45-2.15)                            |
| Infection of other or unspecified genitourinary system | 137 (0.4)                           | 3062 (0.3)                              | 1.18 (0.99-1.40)         | 2.68 (2.22-3.20)                       | 2.58 (2.14-3.08)                            |
| Infection of skin and subcutaneous tissues             | 230 (0.7)                           | 4406 (0.5)                              | 1.38 (1.21-1.58)         | 2.40 (2.07-2.76)                       | 2.36 (2.04-2.71)                            |
| Infections of the digestive system                     | 302 (0.9)                           | 3780 (0.4)                              | 2.12 (1.88-2.38)         | 1.30 (1.15-1.47)                       | 1.28 (1.12-1.44)                            |
| Infections of the heart                                | 198 (0.6)                           | 543 (0.1)                               | 9.69 (8.21-11.38)        | 7.40 (6.09-8.98)                       | 7.37 (6.06-8.94)                            |
| Lower respiratory tract infections                     | 7559 (22.0)                         | 32827 (3.6)                             | 7.52 (7.32-7.73)         | 2.84 (2.76-2.93)                       | 2.84 (2.75-2.93)                            |
| Mycoses                                                | 59 (0.2)                            | 420 (0.0)                               | 3.72 (2.80-4.84)         | 1.80 (1.33-2.40)                       | 1.78 (1.32-2.37)                            |
| Nervous system infection                               | 174 (0.5)                           | 1541 (0.2)                              | 3.00 (2.55-3.49)         | 2.04 (1.72-2.41)                       | 2.02 (1.70-2.39)                            |
| Other infection                                        | 10945 (31.9)                        | 69300 (7.6)                             | 5.66 (5.53-5.80)         | 3.18 (3.10-3.26)                       | 3.16 (3.08-3.24)                            |
| Parasitic infections                                   | 34 (0.1)                            | 628 (0.1)                               | 1.43 (0.99-1.99)         | 1.75 (1.20-2.49)                       | 1.71 (1.16-2.42)                            |
| Peritonitis                                            | 781 (2.3)                           | 8690 (1.0)                              | 2.41 (2.23-2.59)         | 1.41 (1.30-1.53)                       | 1.40 (1.30-1.51)                            |
| Rheumatic fever                                        | 441 (1.3)                           | 1731 (0.2)                              | 6.81 (6.12-7.56)         | 2.21 (1.97-2.47)                       | 2.21 (1.97-2.47)                            |
| Septicaemia                                            | 27 (0.1)                            | 243 (0.0)                               | 2.94 (1.93-4.29)         | 4.36 (2.75-6.71)                       | 4.32 (2.72-6.65)                            |
| Tuberculosis                                           | 586 (1.7)                           | 5628 (0.6)                              | 2.78 (2.55-3.03)         | 1.18 (1.07-1.29)                       | 1.17 (1.06-1.27)                            |
| Urinary tract infections                               | 8453 (24.6)                         | 40778 (4.5)                             | 6.94 (6.76-7.13)         | 2.57 (2.50-2.65)                       | 2.56 (2.49-2.63)                            |
| Viral diseases (excluding chronic hepatitis and HIV)   | 636 (1.9)                           | 6312 (0.7)                              | 2.70 (2.48-2.92)         | 2.70 (2.47-2.95)                       | 2.66 (2.43-2.91)                            |

CI= confidence interval; IMD= Index of Multiple Deprivation; OR= odds ratio.