

# **Arrhythmia in patients with systemic sclerosis: incidence, risk factors and impact on mortality in a Swedish register-based study**

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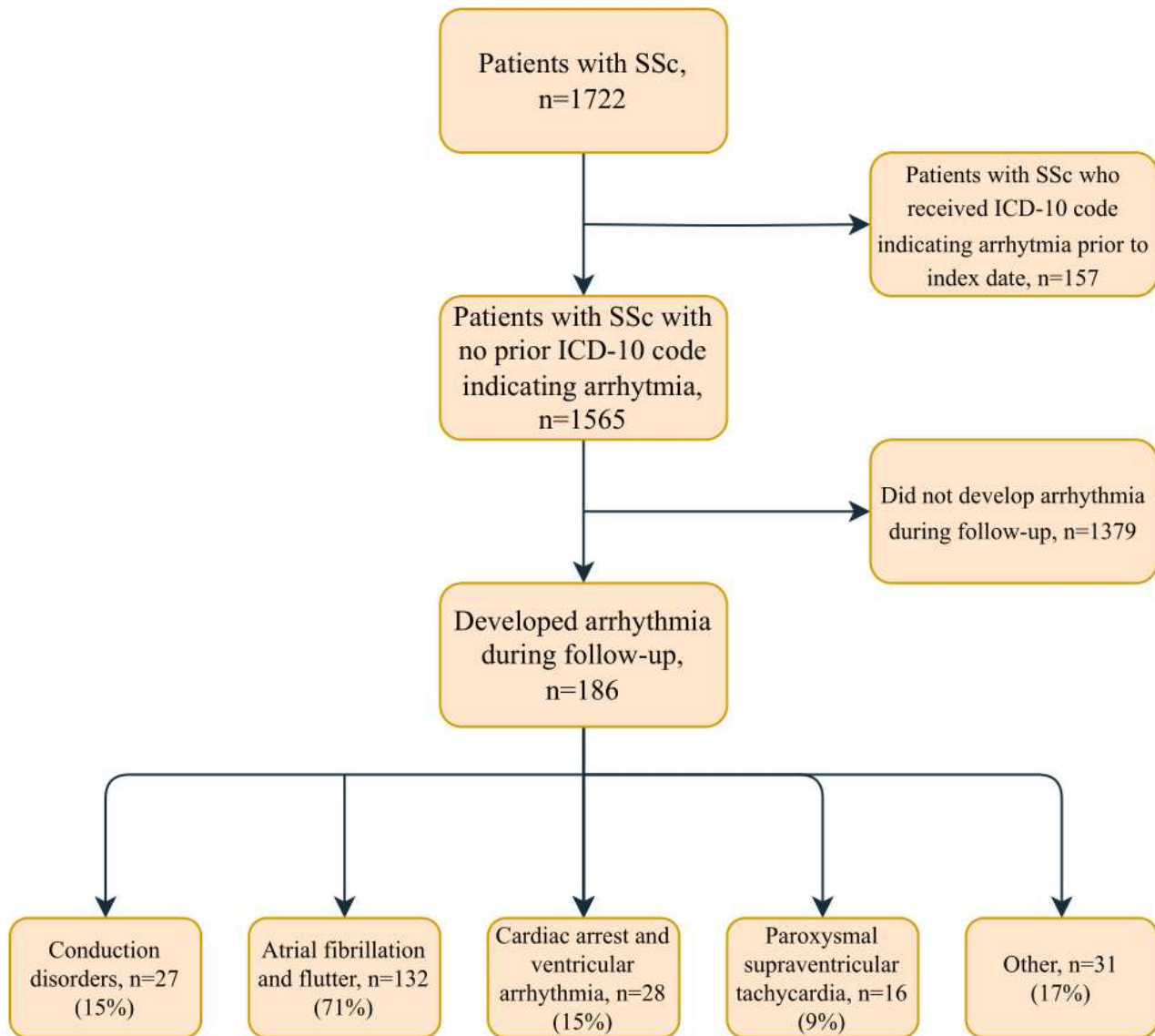
## **Supplementary data**

**Supplementary data 1.** Procedure codes (Swedish: "KVÅ" – Klassifikation av vårdåtgärder) from the National Patient Register used to identify participants who received a permanent pacemaker and implantable cardioverter defibrillator during follow-up.

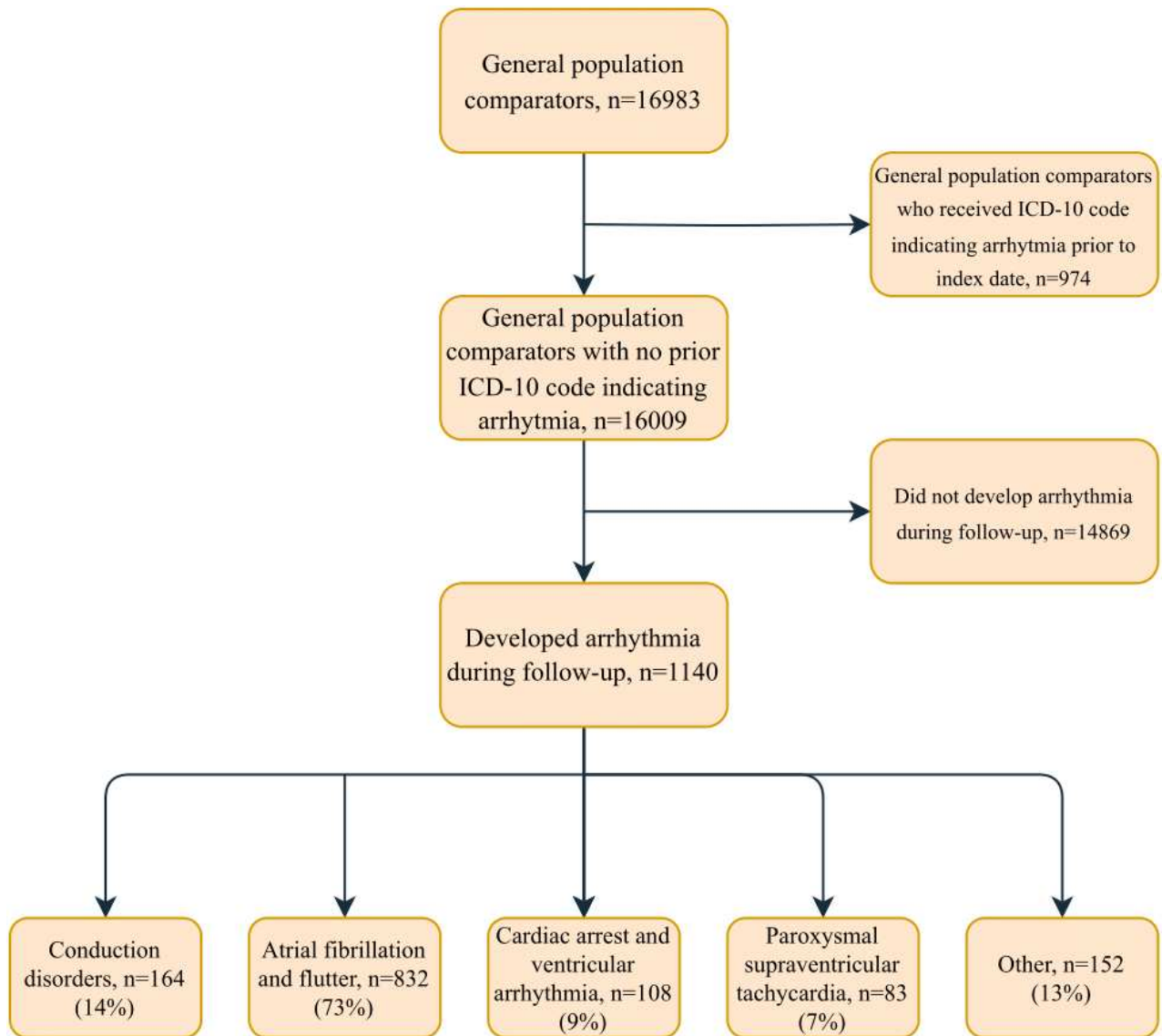
- **Pacemaker:**  
FPE, FPE00, FPE10, FPE20, FPE26, FPE96, ZXG40
- **Implantable cardioverter defibrillator:**  
FPG, FPG30, FPG33, FPG36, FPG96

**Supplementary data 2.** Definition of baseline comorbidities, SSc-related manifestations and drugs.

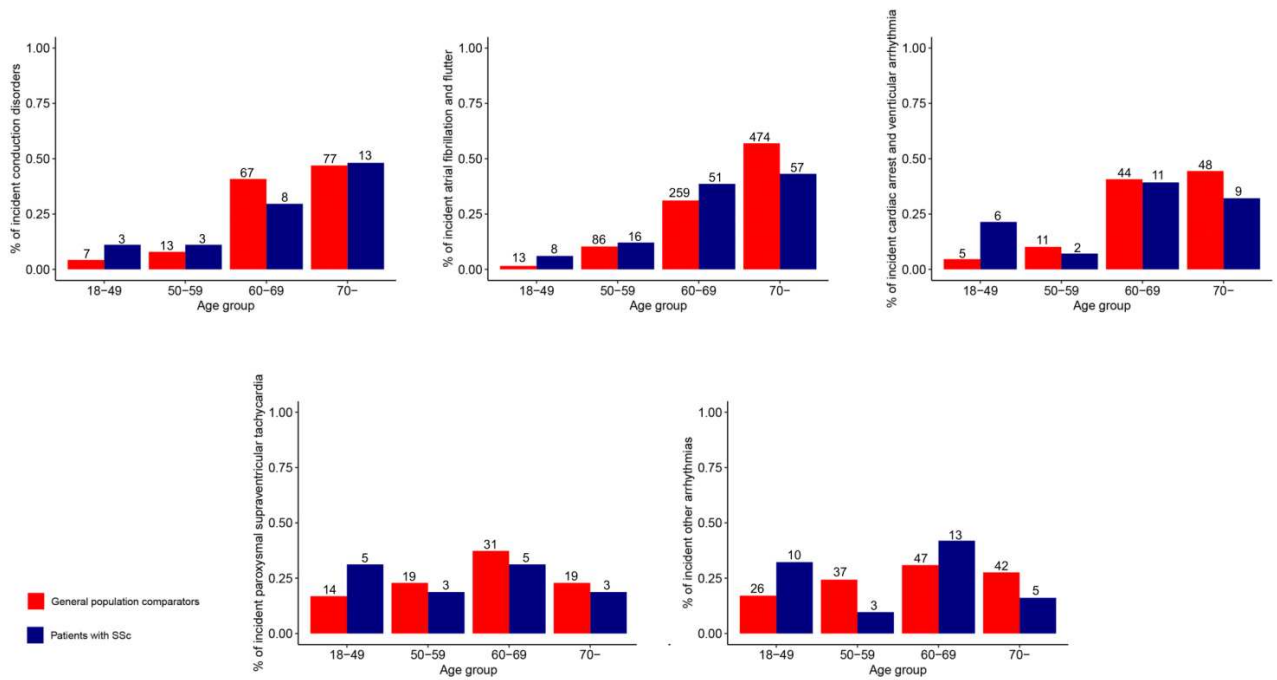
- Diabetes:  
either 1) any visit prior to start of follow-up coded (ICD-10: E10-E14) as a main or contributory diagnosis or 2) at least two dispensed prescription of any glucoselowering drug (ATC: A10) prior to start of follow-up (1).
- Hypertension, this definition is based on Danish data (2):  
either 1) any visit prior to start of follow-up coded (ICD-10: I10-I15) as a main or contributory diagnosis or 2) at least one dispensed prescription of at least two of the following classes of antihypertensive agents prior to start of follow-up:
  - $\alpha$  Adrenergic blockers (C02A, C02B, C02C)
  - non-loop diuretics (C02DA, C02L, C03A, C03B, C03D, C03E, C03X, C07C, C07D, C08G, C09BA, C09DA, C09XA52)
  - vasodilators (C02DB, C02DD, C02DG, C04, C05)
  - $\beta$  blockers (C07)
  - calcium channel blockers (C07F, C08, C09BB, C09DB)
  - renin-angiotensin system inhibitors (C09)
- Heart failure:  
either 1) any visit prior to start of follow-up coded (ICD-10: I150) as a main diagnosis from the outpatient specialist care or 2) any hospitalization prior to start of follow-up with discharge code (ICD-10: I150) as a main or contributory diagnosis from the inpatient care (3).
- Ischemic heart disease:  
any visit prior to start of follow-up coded (ICD-10: I20-I25) as a main or contributory diagnosis (4).
- Asthma/Chronic obstructive pulmonary disease (Asthma/COPD):  
either 1) any visit prior to start of follow-up coded (ICD-10: J45-J46) or (ICD-10: J44) as a main or contributory diagnosis or 2) at least one dispensed prescription of any asthma/COPD drug (ATC: R03AC, R03AK, R03BA, R03BB) prior to start of follow-up (5).
- Renal diseases:  
any visit prior to start of follow-up coded (ICD-10: N00– N19) as a main or contributory diagnosis.
- Pulmonary arterial hypertension (PAH):  
any visit between index date and end of follow-up coded (ICD-10: I270, I272, I278, I279) as a main or contributory diagnosis
- Interstitial lung disease (ILD):  
any visit between index date and end of follow-up coded (ICD-10: J840, J841, J848, J849) as a main or contributory diagnosis.
- Methotrexate exposure for patients with SSc:  
at least one dispensed prescription of methotrexate (ATC: L01BA01, L04AX03) between index date and end of follow-up.
- Mycophenolic acid exposure for patients with SSc:  
at least one dispensed prescription of mycophenolic acid (ATC: L04AA06) between index date and end of follow-up.
- Hydroxychloroquine exposure for patients with SSc:  
at least one dispensed prescription of hydroxychloroquine (ATC: P01BA02) between index date and end of follow-up.
- Phosphodiesterase-5 (PDE5) inhibitors exposure for patients with SSc:  
at least one dispensed prescription of sildenafil (ATC: G04BE03) or tadalafil (ATC: G04BE08) between index date and end of follow-up.
- Calcium channel blockers (CCB) exposure for patients with SSc:  
at least one dispensed prescription of amlodipine (ATC: C08CA01), felodipine (ATC: C08CA02) or nifedipine (ATC: C08CA05) between index date and end of follow-up.



**Supplementary figure 1.** Flowchart of the identified patients with SSc and incident arrhythmia during follow-up.



**Supplementary figure 2.** Flowchart of the identified general population comparators and incident arrhythmia during follow-up.



**Supplementary figure 3.** The distribution of each arrhythmia subtype across age groups in percentages. Numbers above each bar indicate the number of cases in each stratum.

## References

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4. Hammar N, Alfredsson L, Rosen M, Spetz CL, Kahan T, Ysberg AS. A national record linkage to study acute myocardial infarction incidence and case fatality in Sweden. *International journal of epidemiology*. 2001;30 Suppl 1:S30-4.
5. Haupt D, Wettermark B, Nilsson JL. Dispensed volumes of anti-asthmatic drugs related to the prevalence of asthma and COPD in Sweden. *Pharmacoepidemiology and drug safety*. 2008;17(5):461-7.