

Insertable Cardiac Monitor (ICM) Healthcare Pathways of Patients with Cardiac Arrhythmias Based on German Statutory Health Insurance Claims Data

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Introduction

- The prevalence of atrial fibrillation (AF) in the population is about 2 % for people younger than 65, and 9 % for people who are 65 or older¹ but in up to 50 % of patients with heart failure².
- Up to 27 % of all AF patients remain undiagnosed³
- In about 90 % of all atrial arrhythmias, patients do not show symptoms⁴.
- AF increases the risk of stroke five-fold^{5,6}
- Insertable cardiac monitors (ICMs) with dedicated cardiac arrhythmia detection algorithms have been introduced into clinical practice for the diagnosis and monitoring of cardiac arrhythmia including AF in various clinical applications.
- The aim of this study was to compare two similar but differently managed AF patient groups: Patients that received an ICM (intervention group) and patients that were diagnosed with AF but did not receive an ICM (control group).

Methods

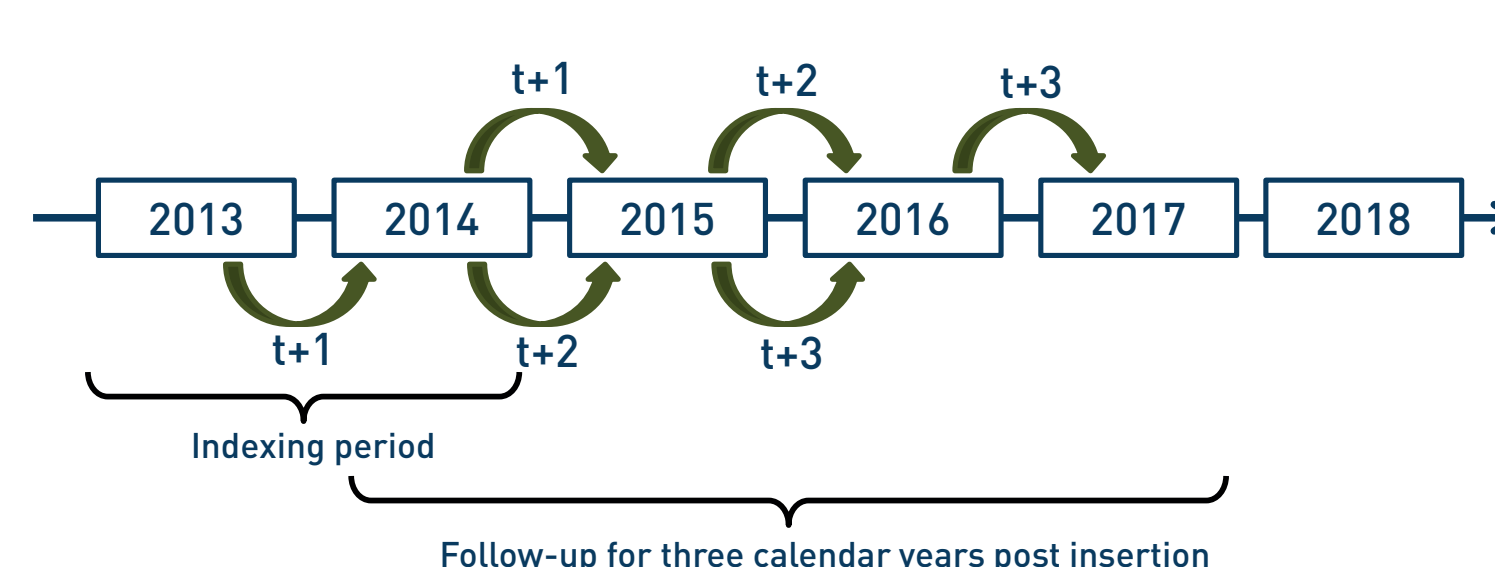
- The anonymized database of more than 4.8 million people insured in a representative German nationwide statutory health insurance scheme was analyzed.
- Patients that received an ICM and/or an AF diagnosis in the years 2013 or 2014 were extracted, matched and analyzed using propensity score matching to ensure comparability between the two cohorts.
- Their three-year longitudinal health care consumption was analyzed, using health insurance claims data.

Index event for the intervention group (after ICM insertion)

- Starts at day of inpatient ICM insertion
- Inclusion of patients that receive an ICM and AF as primary diagnosis at index event
- Inclusion of patients that die during follow-up period
- Exclusion of patients that had an ICM during the washout period
- Exclusion of patients that die during index
- Index event is included in t-1

Pseudo index event for the propensity-score-matched control group (no ICM insertion)

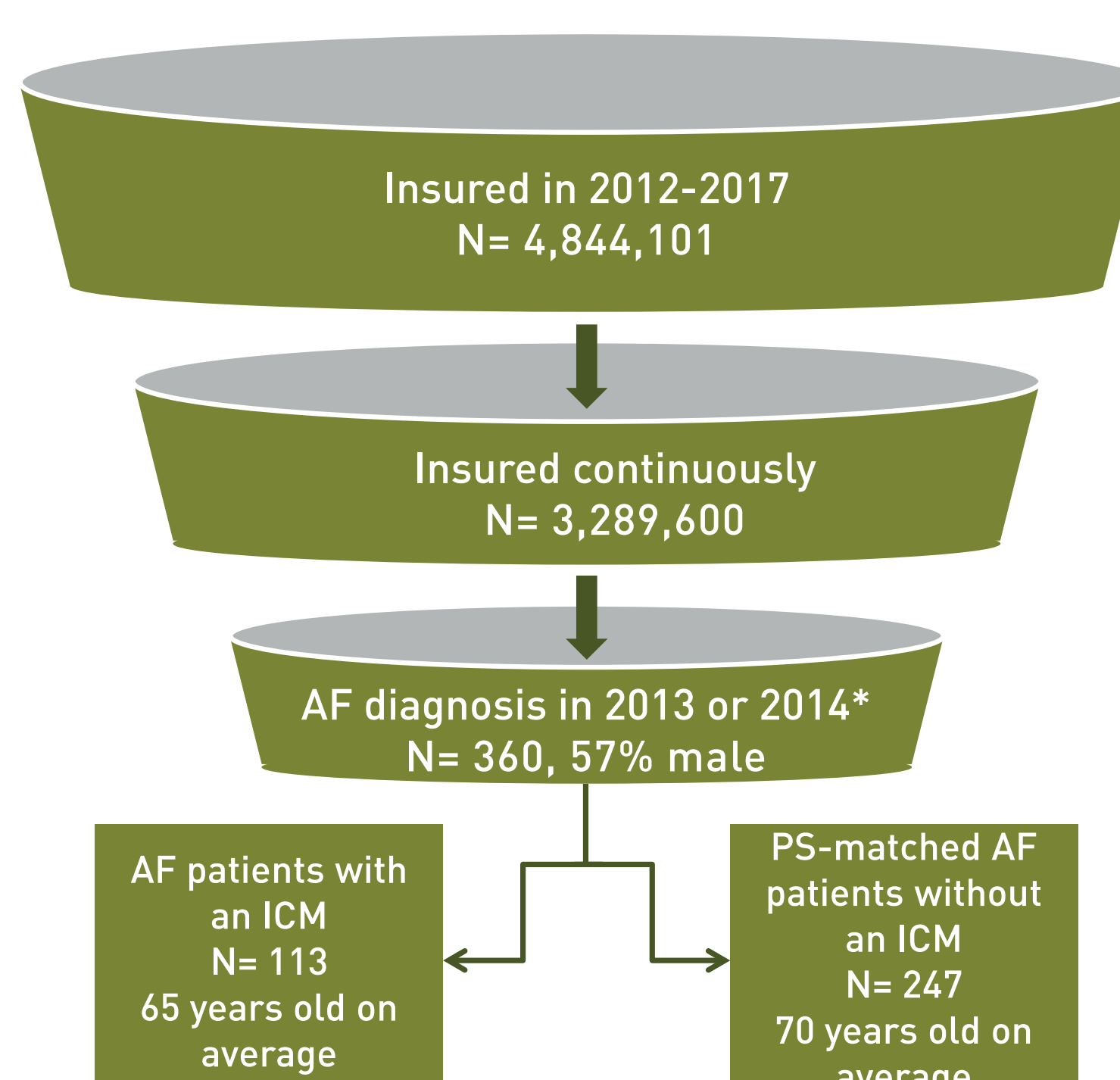
- Starts at day of hospital admission with AF as primary diagnosis
- Inclusion of patients that die during follow-up period
- Exclusion of patients that receive an ICM after the pseudo index period
- Exclusion of patients that die during index
- Index event is included in t-1



Variables that influence the probability of receiving an ICM*

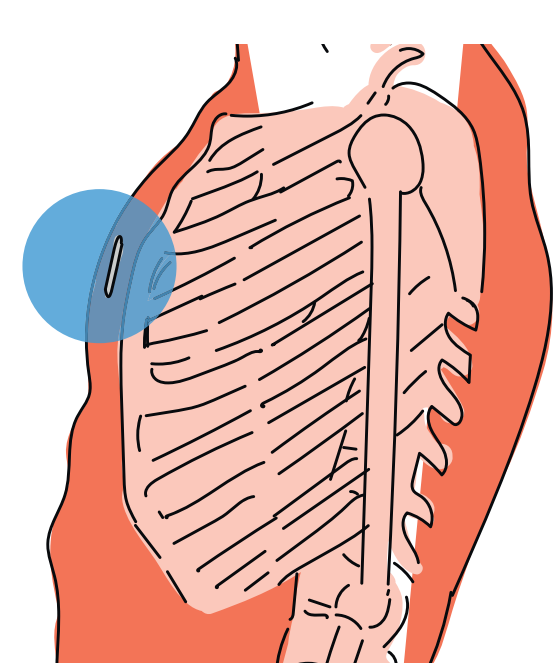
- Age in index quarter
- Sex in index quarter
- Comorbidities (CCI-score**) in year before the index event (in index quarter or 3 quarters before index)
- High-dimensional: Further variables e.g. diagnoses, medication etc.
- The propensity score is calculated using the above and the two groups were matched with the same or similar propensity scores

* Selected with propensity score matching
 ** The Charlson Comorbidity Index (CCI) predicts 10-year survival in patients with multiple comorbidities.



* Sample selection had more criteria not shown here for space reasons but mentioned elsewhere in the poster.

Diagnosis with an Insertable Cardiac Monitor (ICM)

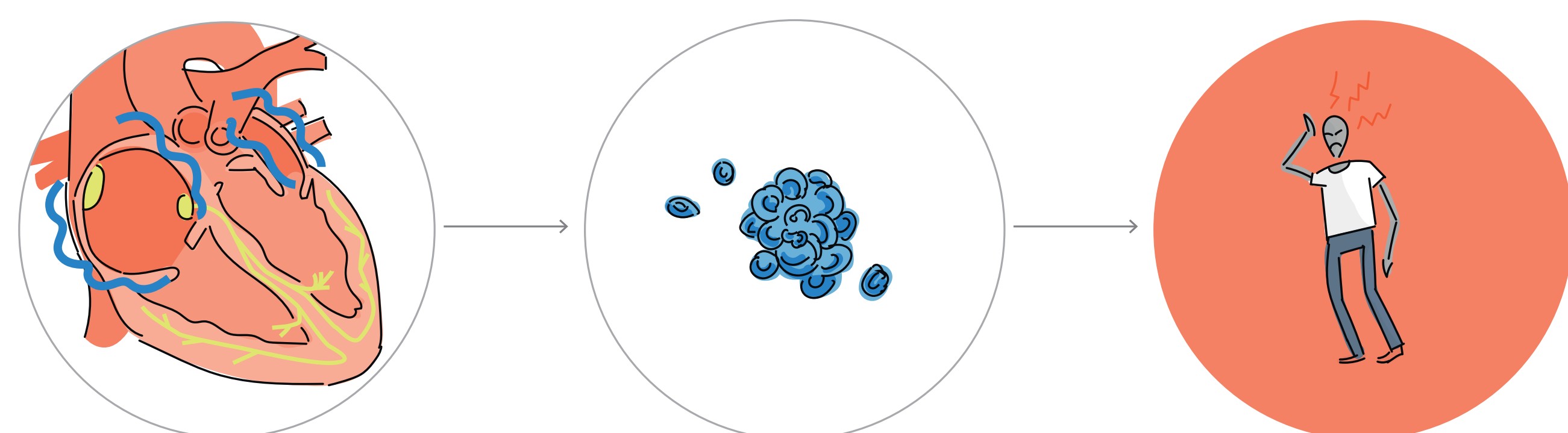


ICMs are inserted under the skin with a very small incision, and the patient can walk out immediately after the insertion.



The ICM works 24/7, sensing cardiac signals and detecting potential arrhythmias. Other diagnostic methods have a much smaller detection window, "catching" fewer arrhythmias.

Stroke



Atrial fibrillation

AF is an abnormal heart rhythm characterized by an irregular and rapid beating of the atria. It can be asymptomatic, meaning it is not felt by the patient.

Clotting

AF can cause the blood to stay longer in the atria and clot. Clots formed in the heart can go directly to the brain, blocking blood flow and causing an ischemic stroke

Stroke

Cryptogenic stroke is a stroke of unknown origin. Using an ICM helps identify if the stroke happened due to AF and allows the patient to receive timely treatment.

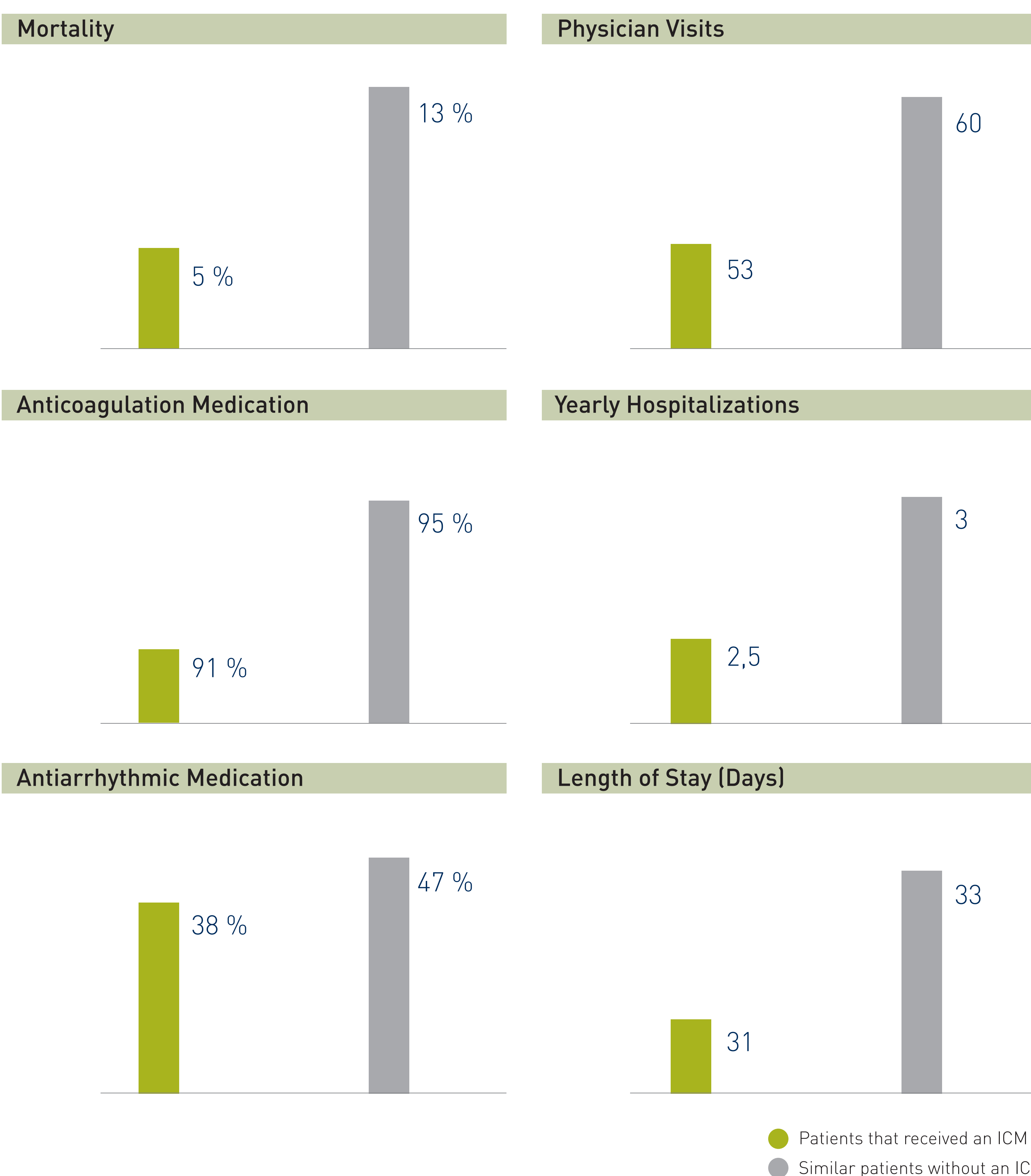
NOTE: There are many other reasons that can cause an ischemic stroke.



- 90 % of all atrial arrhythmia patients do not show symptoms⁴.
- AF increases the risk of stroke five-fold^{5,6}
- AF-related strokes have a worse outcome than stroke from other causes⁷

Results

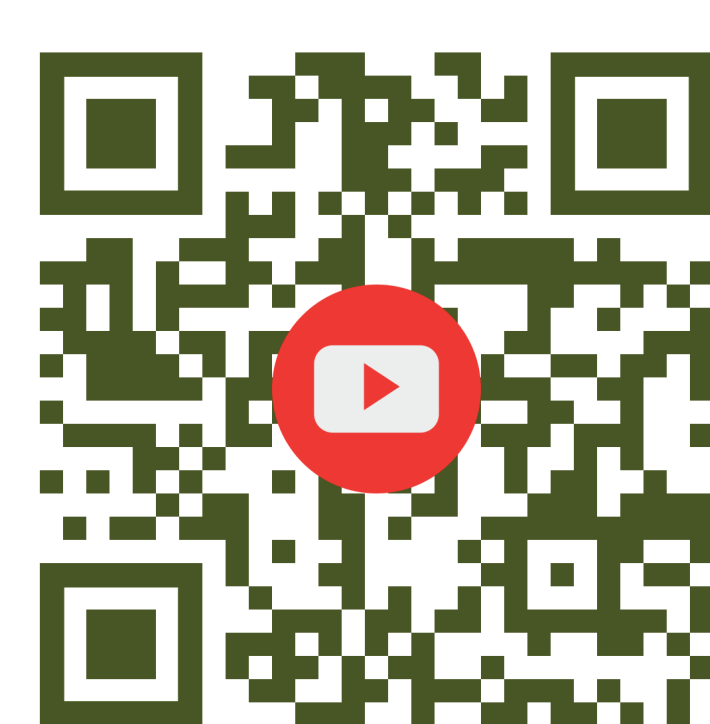
Over three years, the intervention group showed decreased mortality (5 % versus 13 %), had fewer anticoagulation medication prescriptions issued (91 % versus 95 %), fewer antiarrhythmic medication prescriptions (38 % versus 47 %), fewer physician visits (53 versus 60 visits), fewer hospitalizations per year (2.5 versus 3) and a reduced length of stay in hospital (31 versus 33 days).



See an ICM injection procedure video



Scanning opens YouTube video



<https://bit.ly/bm3inject>

Receive an email with the poster in PDF format



Scanning opens www.biotronik.com/poster

Conclusions

Based on insurance claims data, AF patients that receive ICMs exhibit decreased mortality, consume fewer anticoagulation and antiarrhythmic prescriptions, fewer physician visits, fewer hospitalizations and have a decreased length of stay during hospitalizations.

The above findings support the more frequent utilization of ICMs in the diagnostic pathway in eligible patients.

Literature Cited

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