

# NEARLY 40% OF PATIENTS WITH ATRIAL FIBRILLATION-ASSOCIATED ISCHEMIC STROKE WERE NOT DIAGNOSED WITH ATRIAL FIBRILLATION BEFORE THE ISCHEMIC STROKE.

## “Frequency of atrial fibrillation-associated ischemic stroke in the Statutory Health Insurance”

### Background & objective

- About 80% of all strokes are ischemic strokes (cerebral infarctions); approximately, 20% to 30% of all ischemic strokes are due to atrial fibrillation (AF). (1)
- For patients with AF, oral anticoagulation should be considered for stroke prophylaxis. Currently, only few data exist on the incidence of ischemic strokes, prevalent AF, and AF-associated incident ischemic strokes in Germany, taking into account the regional distribution and prescription of oral anticoagulants.
- Our study assessed the frequency of incident ischemic strokes, prevalent AF and AF-associated incident ischemic strokes in the German Statutory Health Insurance (SHI), taking into account the regional distribution and prescription of oral anticoagulants.

### Methods

- We conducted a retrospective cross-sectional study for the period 2014 to 2018 based on the research database of the Institute for Applied Health Research (InGef).
- Insured persons with ischemic stroke or AF were identified among nearly 4.7 million insured persons in the population.
- Patients were identified based on inpatient and outpatient claims of diagnose code I63 according to ICD-10 classification (German modification).
- Prescriptions for oral anticoagulants were identified based on outpatient drug dispensations for vitamin K antagonists (phenprocoumon, warfarin) and non-vitamin K oral anticoagulants (rivaroxaban, apixaban, edoxaban, dabigatran) according to ATC classification.
- Direct medicinal costs in 2018 were calculated for patients with AF-associated incident ischemic stroke.
- Results were standardized to the 2018 Statutory Health Insurance (SHI) population using the KM6 statistics of the Federal Ministry of Health.

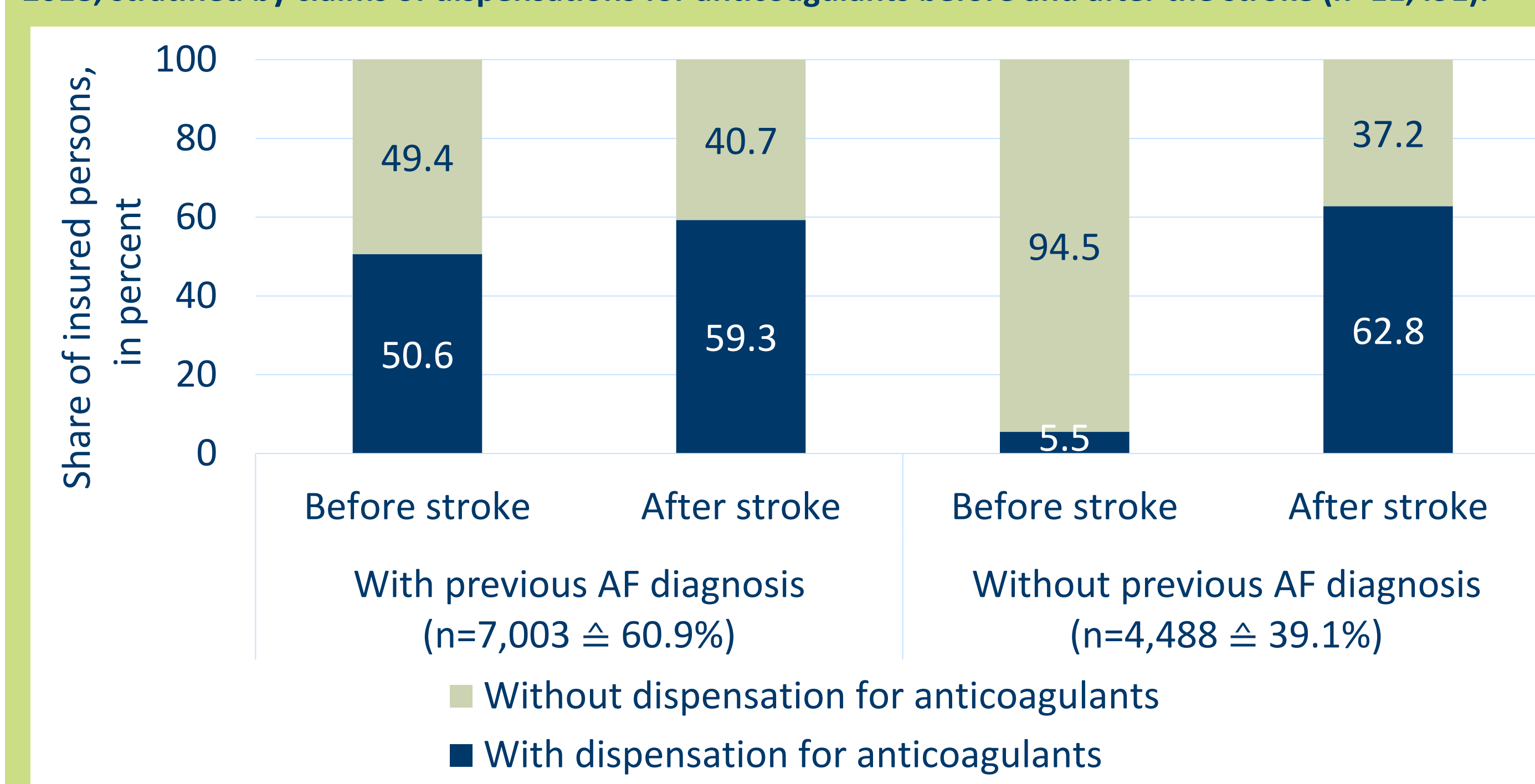
### Results

- Based on approximately 4.7 million insured persons in the InGef research database, 33,163 insured persons were identified between 2014 and 2018 with incident ischemic strokes (mean age, in years: 74.8 ± 12.5; women 47.6%), 269,608 insured persons with prevalent AF (mean age, in years: 74.4 ± 11.8; women 46.0%), and 11,491 insured persons with AF-associated cerebral infarction (mean age, in years: 80.1 ± 9.0; women 52.2%).
- Extrapolated to the SHI population in Germany, the incidence of ischemic strokes and AF-associated incident ischemic strokes decreased between 2014 and 2018, while the prevalence of AF increased. (Table 1)
- Regional differences were small for incident ischemic strokes but large for prevalent AF as well as AF-associated incident ischemic strokes.
- The deviation of the mean values of the standardized rates of prevalent AF and AF-associated incident ischemic strokes was at least 0.5 standard deviations below and above the mean in at least 6 (different) regions of the Association of Statutory Health Insurance Physicians (German: KV-Regionen).
- AF was diagnosed before the ischemic stroke in the majority of insured patients with AF-associated incident ischemic stroke. In those with a previous diagnosis of AF, only half received anticoagulants before the stroke, and 59.3 % afterwards. (Figure 1)

**Table 1: Standardized incidence and prevalence rates per 100,000 in 2014 and 2018 extrapolated to the SHI population in Germany in the respective years.**

Rate	2014			2018		
	Female	Male	All	Female	Male	All
Incident ischemic strokes	175.2	169.2	176.1	149.2	152.2	150.6
Prevalent AF	3,603.8	4,025.0	3,803.3	4,543.1	5,033.9	4,778.9
AF-associated incident ischemic strokes	67.6	50.6	59.5	56.6	49.9	53.4

**Figure 1: Frequency of insured persons with AF-associated incident ischemic strokes between 2014 and 2018, stratified by claims of dispensations for anticoagulants before and after the stroke (n=11,491).**



- After an AF-associated incident ischemic stroke, the direct medicinal costs in 2018 were about 22,404 euros. Projected to the SHI system, this results in 2.4 billion euros or 1.1% of the total SHI expenditures for health services.

### Discussion & conclusion

- Possible reasons for the increasing prevalence of AF include demographic changes and increased AF awareness.
- There is no evidence for an increase in the proportion of prescriptions for oral anticoagulants among insured persons with AF-associated incident ischemic stroke or structural differences between eastern and western federal states, or city and rural areas.

### Implications for healthcare

- The analyses indicate that efforts are still needed to diagnose AF earlier and ensure adequate medical care when AF is diagnosed.
- Further research is necessary to determine the actual prevalence of AF, details considering the provision of anticoagulants, as well as potential regional differences.

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#### References

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