

# Real World Evidence on Health Care Resource Utilization and Economic Burden of Arrhythmias in Patients with Diabetes and COPD

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## BACKGROUND AND OBJECTIVE

- Arrhythmias significantly increase healthcare resource utilization (HCRU) and costs for patients with diabetes and chronic obstructive pulmonary disease (COPD), especially those requiring ER visits, hospitalizations, or who are diagnosed in acute care settings.
- Additionally, about 11% of atrial fibrillation (AF) cases in the US go undiagnosed, commonly as subclinical AF. Retrospective studies reveal that about 11% of AF cases remain undiagnosed, with the estimated two-year prevalence of silent AF being 23%.
- This undiagnosed population is often older and faces a significantly higher risk of stroke, (high CHA2DS2-VASc scores). In many cases, heart failure, cardiomyopathy, myocardial infarction, and stroke are the initial signs of silent AF.
- Supraventricular tachycardia is often misdiagnosed as anxiety or panic disorder.
- Heart block may cause no symptoms, or it may cause dizziness, fainting, the feeling of skipped or irregular heartbeats, trouble breathing, fatigue, or even cardiac arrest before being diagnosed.
- Patients with silent arrhythmias have increased office, ER visits, and hospitalization rates both before and after diagnosis.
- Recent published reports have shown improved clinical outcomes and reduced healthcare utilization in patients undergoing ambulatory monitoring without a pre-existing arrhythmia diagnosis.
- Early detection through monitoring devices could mitigate major cardiovascular events and lower the utilization of acute care services, leading to reduced healthcare costs.

## METHODS

### Study Design

Retrospective claims analysis using the Merative MarketScan and the Symphony Integrated Dataverse databases.

We identified patients from Jan 2006 to July 2023 > age 18 years with claims for Type 2 Diabetes (T2D) or COPD or both T2D and COPD (T2D/COPD) and divided them into groups.

### Patient Population

**Target:** Patients with either of the conditions without prior history of arrhythmias, followed by arrhythmia claims.

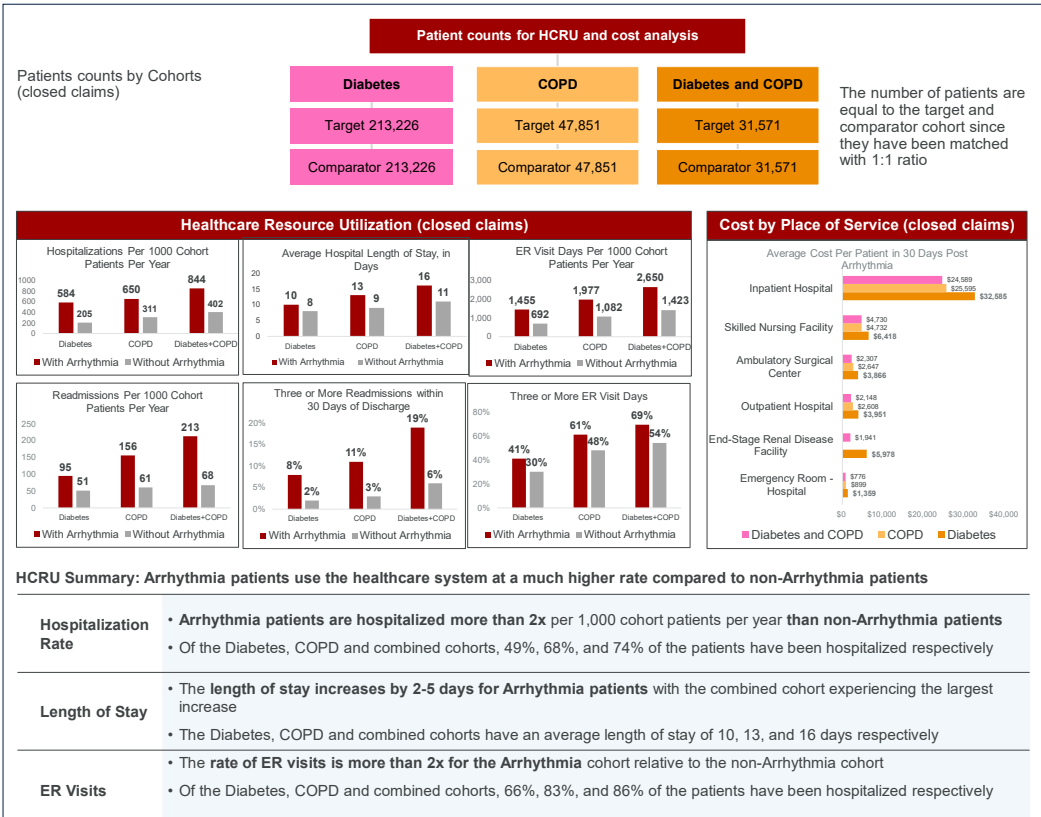
**Control:** Patients with either of the conditions, but without arrhythmia claims.

For the target group, the initial date of arrhythmia on or after a diagnosis of T2D or COPD was set as the index date. For the control cohort, an index date was determined using a similar distribution of the time from T2D or COPD as the distribution of time to arrhythmias from T2D or COPD in the target population.

Target and control were matched 1:1 on demographics, year of first episode of arrhythmia, risk (ECI, DSI, Gold criteria). HCRU and medical cost drivers were analyzed over the 12 months pre index and 12 months post index.

HCRU of patients with arrhythmia screened with EKG monitoring devices was compared to that of not screened patients.

## RESULTS



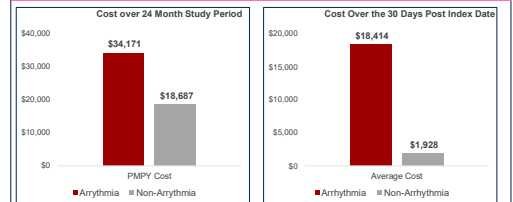
## CONCLUSIONS

The economic burden of managing undiagnosed and untreated arrhythmias is substantial, contributing significantly to overall healthcare costs. This study shows that arrhythmias significantly increase HCRU and total cost for already costly diseases like T2D and COPD, particularly in patients requiring ER visits and hospitalization. Early detection with EKG monitoring devices play a key role in diagnosing silent cardiac arrhythmias, helping to prevent serious outcomes like stroke and heart failure while potentially reducing the need for emergency and inpatient care and associated costs.

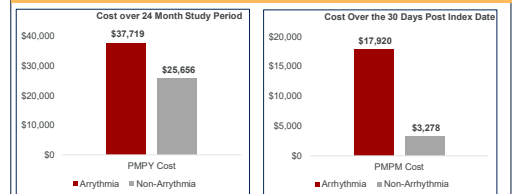
### Overall Cost:

Arrhythmia patients have a larger yearly cost which is predominantly due to a spike in costs associated with acute care around the time of the arrhythmia

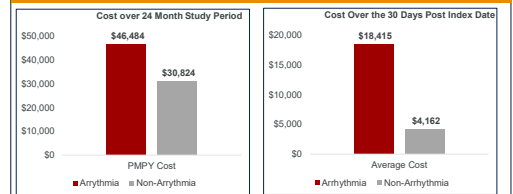
### Diabetes



### COPD



### Diabetes and COPD



### Abbreviations

AF=atrial fibrillation; COPD=Chronic Obstructive Pulmonary Disease; DSI=; ECI=; EKG=electrocardiogram; ER=emergency room; HCRU=health care resource utilization; PPY=patient-per-year; T1D=Type 1 Diabetes; T2D=Type 2 Diabetes; US=United States.

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