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USE OF COMMERCIAL CLAIMS DATA TO ESTIMATE TRANSTHYRETIN-AMYLOID CARDIOMYOPATHY PREVALENCE AND INCIDENCE IN THE US

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BACKGROUND

- Transthyretin-mediated (ATTR) amyloidosis is a rare protein folding disorder often associated with cardiac involvement[1-3]
- Current prevalence and incidence estimates of ATTR amyloidosis, including symptomatic ATTR-cardiomyopathy (ATTR-CM), in the US remain uncertain, as ATTR is underdiagnosed[1,4]
  - Estimating the prevalence and incidence rates of ATTR-CM is further complicated as the associated cardiac symptoms are often misdiagnosed as cardiac conditions that are common in the general population, such as hypertensive heart disease[1,3,5,6]
- Our aim was to investigate the feasibility of using a large US insurance claims database to identify patients with ATTR amyloidosis and ATTR-CM and to estimate the US prevalence and incidence of ATTR-CM

METHODS

Retrospective study using IBM® MarketScan® Commercial and Medicare Supplemental databases[a] from 01/01/2014 – 12/31/2018

Patient Identification

- Identified patients ≥18 years believed to be diagnosed with ATTR: ≥1 inpatient or ≥2 outpatient claims with an ICD-10-CM code for hereditary (E85.1, E85.2) or wild-type (E85.82) form in 2018 or another amyloidosis form in 2018
- Among patients with ATTR (either hereditary or wild-type) identified above, those with evidence of congestive heart failure (CHF) or cardiomyopathy (restrictive or hypertrophic) between 2014-2018 were identified as ATTR-CM cases
- Patients with evidence of (≥1 claim for) chemotherapy, stem cell transplant, light-chain amyloidosis, or dementia were excluded

Study Measures

- 2018 ATTR-CM incidence rate
  - Number of cases of newly diagnosed ATTR-CM in 2018 divided by total at-risk (disease-free) patient years from 01/01/2018 to either diagnosis (cases) or continuous enrollment end (non-cases) in 2018, whichever occurred first
    - Newly-diagnosed ATTR-CM cases in 2018 were at-risk members (i.e., ATTR free) at the beginning of 2018 and had continuous enrollment but no ATTR amyloidosis claim (ICD-9-CM: 277.30, 277.31, 277.39; ICD-10-CM: E85.0, E85.1, E85.2, E85.3, E85.4, E85.81, E85.82, E85.89, E85.9) in 2017
    - Incidence reported as cases per million person-years (PMPY)
- 2018 ATTR-CM prevalence proportion
  - Number of adult patients who had prevalent (existing or newly diagnosed) ATTR-CM, divided by all members enrolled in a health plan on June 30th of each 2018
    - Prevalence reported as cases per million persons

Statistical Analysis

- Incidence rates and prevalence estimates stratified by age group and gender
- All data transformations and statistical analyses were performed using SAS© version 9.4

[a]. MarketScan is a trademark of IBM Corporation in the United States and other countries.

RESULTS

Table 1. ATTR-CM Amyloidosis Incidence Among Commercially-Insured Adults in 2018

	N	Incidence (per million person-years)
All	47	3.96
Age group		
18-34	0	0
35-54	5	0.99
55-64	15	5.26
65+	27	36.61
Gender		
Female	11	1.76
Male	36	6.38

ATTR-CM: Transthyretin-mediated cardiomyopathy.

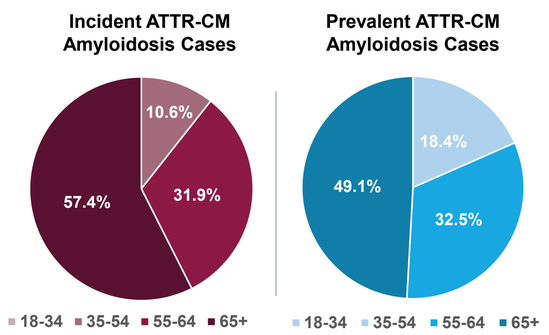
Table 2. ATTR-CM Amyloidosis Prevalence Among Commercially-Insured Adults in 2018

	N	Prevalence (per million persons)
All	114	6.09
Age group		
18-34	0	0
35-54	21	2.75
55-64	37	9.32
65+	56	54.93
Gender		
Female	34	3.48
Male	80	8.95

ATTR-CM: Transthyretin-mediated cardiomyopathy.

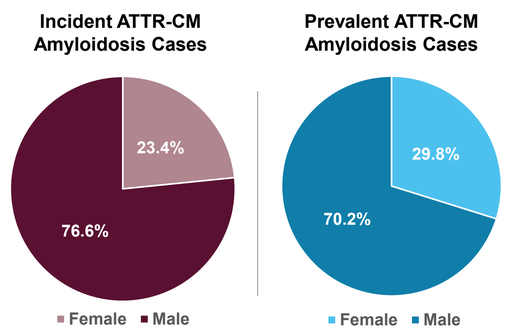
- Estimated ATTR-CM incidence in 2018 was 3.96 PMPY
  - Incidence was highest among those ≥65 years (36.61) and among males (6.38) vs. females (1.76), all PMPY
- Estimated ATTR-CM prevalence in 2018 was 6.09 per million
  - Prevalence was highest among patients ≥65 years (54.93) and among males (8.95) vs. females (3.48), all per million

Figure 1. Distribution of ATTR-CM Amyloidosis Cases by Age Among Commercially-Insured Adults in 2018



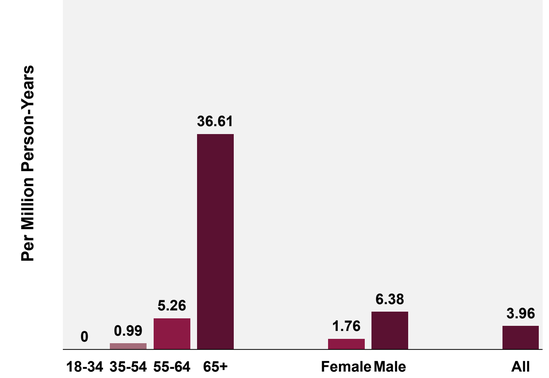
ATTR-CM: Transthyretin-mediated cardiomyopathy.

Figure 2. Distribution of ATTR-CM Amyloidosis Cases by Gender Among Commercially-Insured Adults in 2018



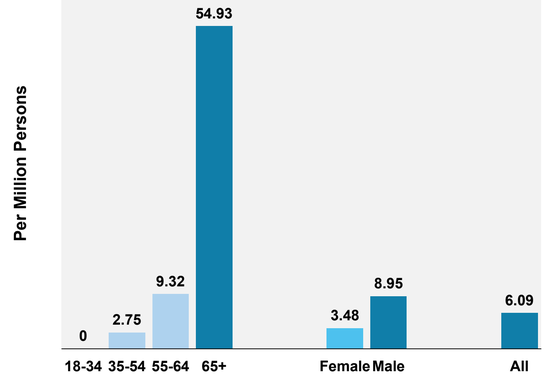
ATTR-CM: Transthyretin-mediated cardiomyopathy.

Figure 3. ATTR-CM Amyloidosis Incidence Among Commercially-Insured Adults in 2018



ATTR-CM: Transthyretin-mediated cardiomyopathy.

Figure 4. ATTR-CM Amyloidosis Prevalence Among Commercially-Insured Adults in 2018



ATTR-CM: Transthyretin-mediated cardiomyopathy.

LIMITATIONS

- Estimation of ATTR-CM incidence and prevalence using administrative claims data has not been previously validated; such estimation is difficult due to diagnostic challenges such as lack of awareness of the disease and, until recently, the absence of medical coding specific to the different types of transthyretin amyloidosis, including wild-type ATTR amyloidosis (ATTRwt)
- Estimates in this study are specific to commercially-insured adults in the US and are not generalizable to the broader US adult population
  - Further, we determined that our ATTR-CM prevalence estimates were lower compared to age-standardized estimates for the US population

CONCLUSION

- In this commercial insurance claims population, the prevalence and incidence of ATTR-CM increased with age and were higher in men than in women
- Understanding epidemiological trends in ATTR-CM will help to identify populations at risk that could benefit from early interventions

DISCLOSURES

- Sponsorship: Akcea Therapeutics provided study funding
- SRR, EC, and MHT are employees of Partnership for Health Analytic Research, LLC, which was paid by Akcea to perform this research
- JP: Advisory board fees: Akcea
- JN: Financial: Pfizer, Akcea and Eidos; Grants: Pfizer. Consultant: Pfizer, Eidos, Akcea, and Alnylam
- NF: Consulting/Speakers: honoraria-Akcea, Alnylam, Pfizer; Research support/clinical trial participation: Akcea, Alnylam, Pfizer, Eidos

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