

# Cardiovascular disease among adults with type 1 diabetes mellitus in the US

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## BACKGROUND

Cardiovascular disease (CVD) is a major cause of morbidity and mortality for people with type 1 diabetes (T1D).

However, few studies report the age- and sex-specific burden of CVD in this population. Understanding the presentation of CVD in T1D is critical for its prevention and control.

This study aims to quantify the age- and sex-specific burden of CVD among adults with T1D in the US using real-world data.

## RESEARCH QUESTION

What is the current age- and sex - specific prevalence of cardiovascular disease in adults with type 1 diabetes ?

## METHODS

Study population: Individuals with claims from Merative MarketScan, a nationwide commercial claims database

Inclusion criteria: Adults aged 20+ with T1D-related diagnosis codes (E10.XX) in 2016

Outcome ascertainment: ICD-10 codes from claims for inpatient and outpatient services were used ascertain the following CVD outcomes:

- Ischemic heart disease (IHD), stroke, heart failure (HF), acute myocardial infarction (AMI), atrial fibrillation (AF), peripheral arterial disease (PAD)
- Composite CVD: a diagnosis of any one CVD outcome
- CVD multimorbidity: a diagnosis of two or more CVD outcomes

## RESULTS

Among 45,877 people with T1D (age 47±16years; 48.2% female), the overall prevalence of CVD was 15.63%.

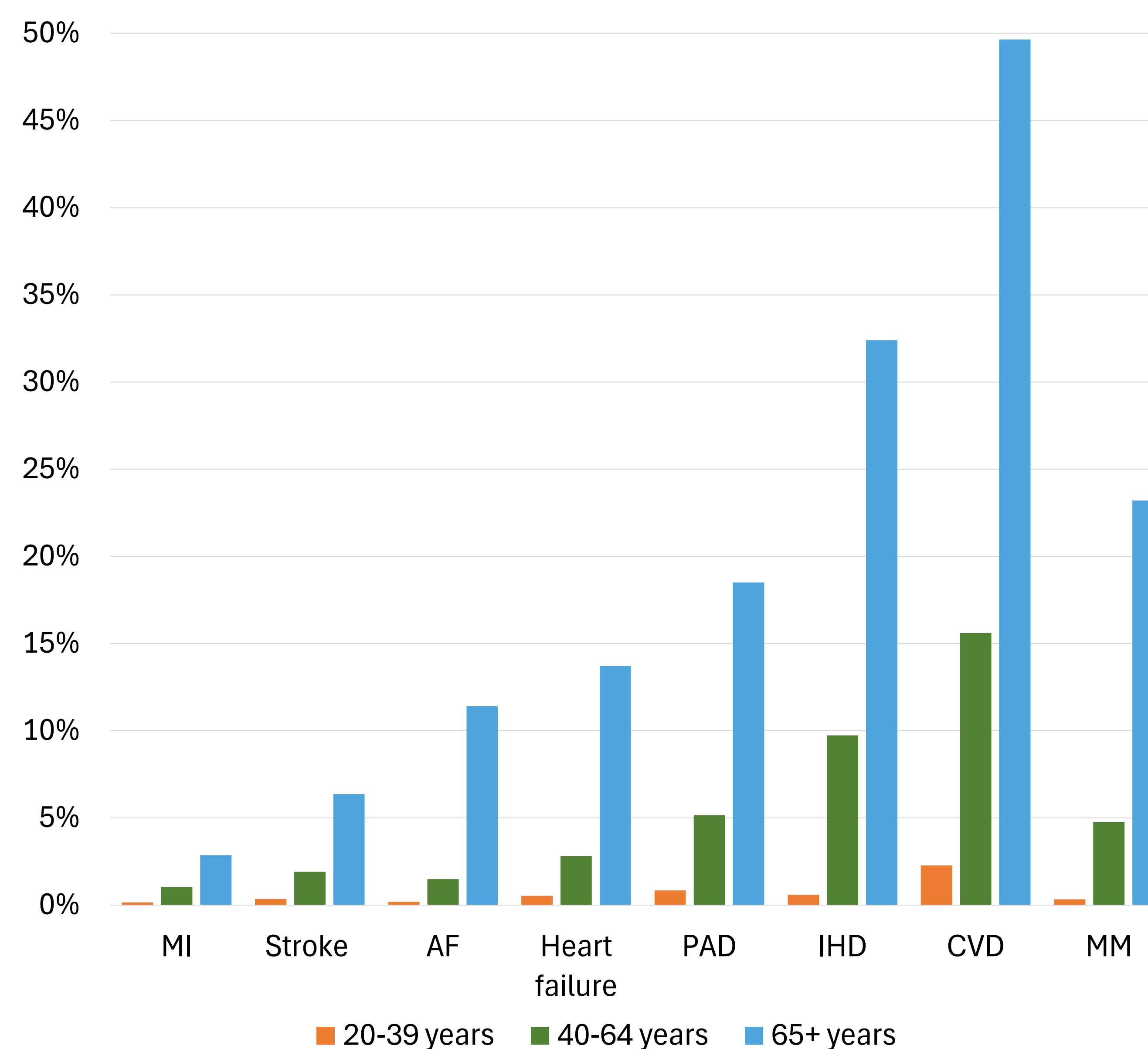
IHD and PAD were the most prevalent types of CVD (Table 1).

The prevalence of CVD increased with age from 2.28% in those aged 20-39 years to 49.65% in those aged 65+ years (Figure 1) and was higher in men than women (p<0.001) (Figure 2).

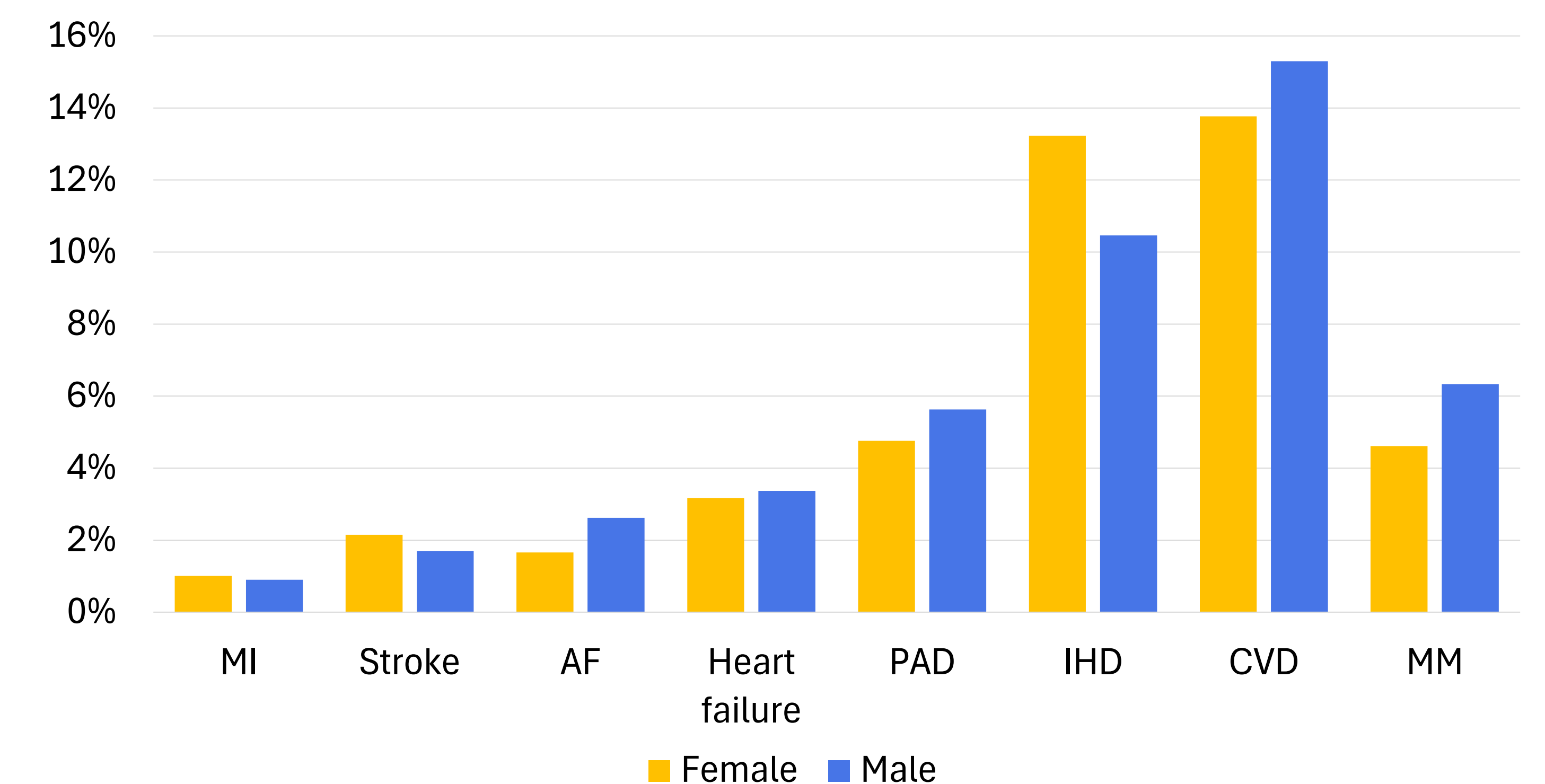
Table 1 : Cardiovascular disease outcomes among adults with type 1 diabetes mellitus in the US, 2016

Cardiovascular disease	N=45,877 N (%)
MI	453 (0.99)
Stroke	908 (1.98)
AF	1087 (2.37)
Heart failure	1603 (3.49)
PAD	2512 (5.48)
IHD	4433 (9.66)
CVD	7172(15.63)
MM	2623 (5.72)

AF- atrial fibrillation , CVD- composite cardiovascular disease, IHD- ischemic heart disease , MI – myocardial infarction, MM- cardiovascular multimorbidity PAD- peripheral arterial disease



**Figure 1:** Age-specific prevalence of cardiovascular disease outcomes in the US , 2016. AF- atrial fibrillation , CVD- composite cardiovascular disease , IHD- ischemic heart disease , MI – myocardial infarction , MM- cardiovascular multimorbidity (≥ 2 cardiovascular disease components), PAD- peripheral arterial disease



**Figure 2:** Age-standardized sex- specific prevalence of cardiovascular disease among adults with type 1 diabetes mellitus in the US , 2016. AF- atrial fibrillation , CVD- composite cardiovascular disease, IHD- ischemic heart disease , MI – myocardial infarction , MM- Cardiovascular multi morbidity (≥ 2 cardiovascular disease components) , PAD- peripheral arterial disease

## CONCLUSIONS

- The overall burden of CVD in this population of adults with T1D was high; it increased with age and was higher in men than women.
- The prevalence is higher than previously observed in people with T1D (8%)<sup>1</sup> and in the general population (5.5%)<sup>2</sup> but lower than reported in people with type 2 diabetes (45.2%) in another study using insurance claims data.<sup>3</sup>
- While overall CVD prevalence was higher in males, the prevalence of outcomes such as stroke and ischemic heart disease was higher in women.
- This report is generalizable only to adult patients with T1D with private health insurance in the US and there may be misclassification bias from using diagnostic codes to classify CVD
- Future studies should examine the factors associated with the increasing CVD burden and the role of socioeconomic factors in this change.

## ACKNOWLEDGEMENT & REFERENCES

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### References:

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