Cardiovascular Event Rate and Mortality Among Primary Prevention Hypercholesterolemia Patients in Japan

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Introduction

- Hypercholesterolemia is a major modifiable risk factor for atherosclerotic cardiovascular disease[1)].
- In Japan, the burden of hypercholesterolemia is rising, highlighting the critical need for effective primary prevention[2)].
- However, few studies have comprehensively examined the progression from primary to subsequent cardiovascular events.
- This study aimed to characterize the distribution and timing of first and second cardiovascular events using a claims database.

Methods

- We conducted a retrospective cohort analysis using the Diagnosis Procedure Combination database from Medical Data Vision Co., Ltd. (Tokyo, Japan)[3)], covering the period from April 2008 to March 2024.
- The analysis was conducted using Prospection's analytics platform to identify primary cardiovascular events, subsequent events, and the time to each.
- Patients with hypercholesterolemia (E78.0) were included in the analysis.
- The index date was defined as the date of the first hospitalization due to myocardial infarction (MI; ICD-10: I21,I22), ischemic stroke (IS; ICD-10: I63), or unstable angina (UA; ICD-10: I20.0), based on inpatient and outpatient ICD-10 codes recorded in the database.
- Patients with a diagnosis of cancer (ICD-10: C00–43, C45-C97), liver cirrhosis (ICD-10:K70.3, K71.7, K74.3 K74.4-K74.6), or dialysis (J038) were excluded.

Study design

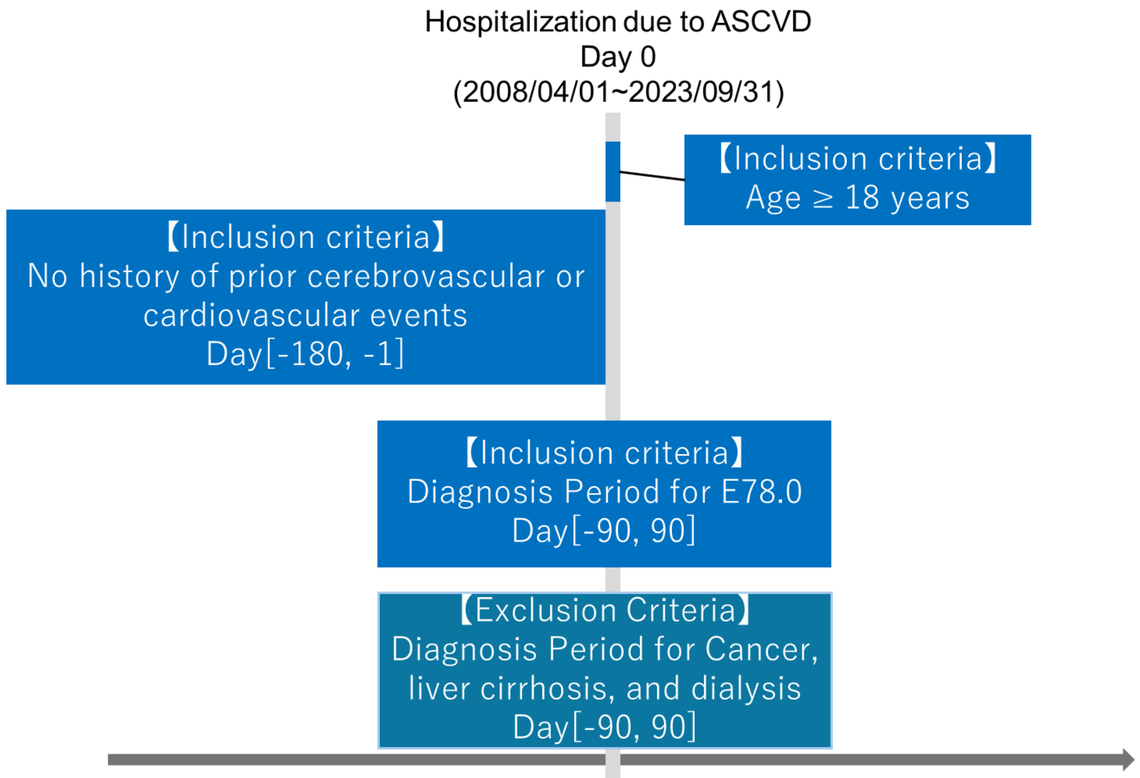

Figure 1. Study design

Results

- A total of 212,363 patients were included in the analysis.
- The mean age was 70.56 years, and 67.42% were male.
- The first cardiovascular events were categorized as follows: 45.5% IS, 35.3% MI, and 19.2% UA

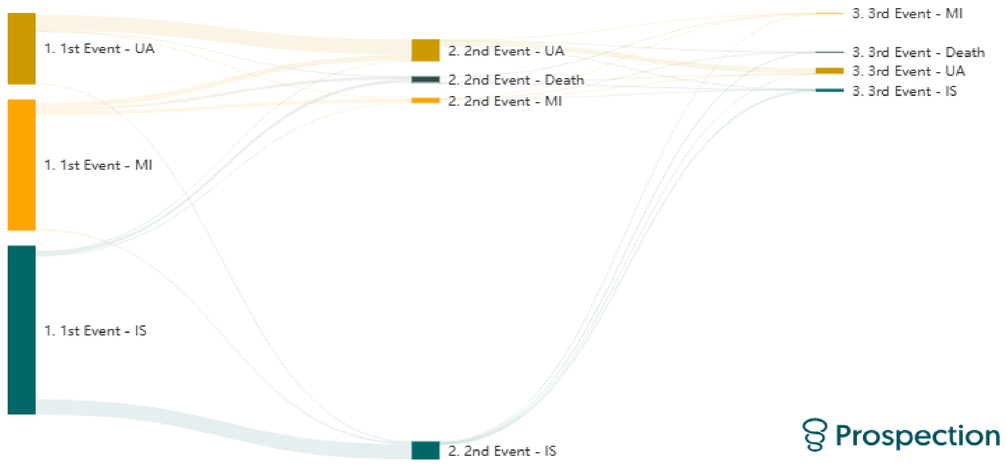

Figure 2. Patient Journey in Cardiovascular Events

Table 1. Patient distribution and transition period for each event

Outcome	1st Event		2nd Event			3rd Event		
	Number of Patients	% of Patients	Number of Patients	% of Patients	Mean Time from First to Second Cardiovascular Event (months)	Number of Patients	% of Patients	Mean Time from Second to Third Cardiovascular Event (months)
IS	96,556	45.50%	10,411	35.10%	22.3	1,726	27.70%	18.5
MI	75,050	35.30%	3,106	10.50%	26.4	515	8.30%	25.9
UA	40,757	19.20%	12,627	42.60%	12.8	3,363	53.90%	13.5
Death	-	-	3,529	11.90%	1.9	636	10.20%	1.6
Total (average)	212,363	100.00%	29,673	100.00%	16.3	6,240	100.00%	14.7

Each event was defined as a hospitalization with a diagnosis of ASCVD.

Conclusion

- These findings indicate a high risk of early mortality (11.90%) following initial cardiovascular events, with affected patients dying on average just over two months later.
- These results emphasize the need for sustained cardiovascular risk management even among primary prevention populations.
- Clinical information may not have been captured if patients received care or were hospitalized at other medical institutions, potentially limiting follow-up.

Reference

1.Joseph P, Leong D, McKee M, Anand SS, Schwalm JD, Teo K, et al. Reducing the Global Burden of Cardiovascular Disease, Part 1: The Epidemiology and Risk Factors. Circ Res. 2017;121(6):677-94.
2.Ministry of Health, Labour and Welfare. (2023). Summary of Vital Statistics (Final data), 2022 (in Japanese). Retrieved from https://www.mhlw.go.jp/toukei/saikin/hw/jinkou/kakutei22/
3.Medical Data Vision Co., Ltd. MDV Database.; Available at: Medical Data Vision Co., Ltd. Accessed Oct 6, 2025.