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## Key messages

- ◆ Half of patients filled only one prescription.
- ◆ Adherence is extremely low.
- ◆ LDL-C reduction is much greater among adherent users.

## INTRODUCTION

- Cardiovascular disease is the leading cause of death in China, and elevated **low-density lipoprotein cholesterol (LDL-C)** is a key modifiable risk factor.
- Guidelines recommend **PCSK9 inhibitors (PCSK9i)** as add-on therapy to statins. After their inclusion in the National Reimbursement Drug List (NRDL) in 2022, accessibility has greatly increased, but how these drugs are actually used in real-world practice in China remains unclear.

## OBJECTIVES

- To evaluate the real-world use of PCSK9 inhibitors in Tianjin, China, including prescription patterns, adherence, persistence, and LDL-C outcomes.
- To compare LDL-C outcomes between adherent and non-adherent subgroups.

## METHODS

- Data sources**
- Retrospective observational cohort data were obtained from the **hospital information system (HIS)** of more than 70 secondary and tertiary public hospitals in Tianjin, China, covering both outpatient and inpatient settings.
- Study population**
- Adult patients who first initiated alirocumab or evolocumab between January 2022 and December 2022 were included.
  - The first prescription date was defined as the index date; 12 months before index date was considered as the baseline, and patients were followed up until death or the end of study (June 30, 2023).

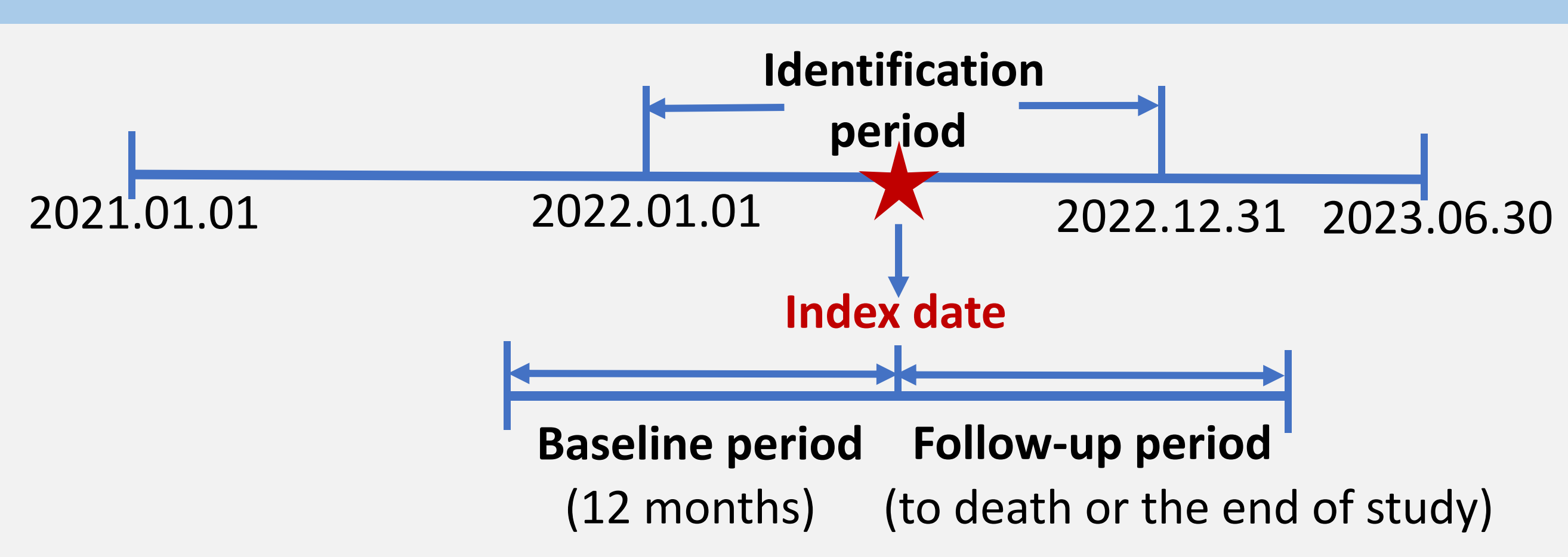


Figure 1. Overview of Study Period

- Research measures**
- Baseline characteristics, **prescription patterns, adherence, persistence.**
  - **Changes in LDL-C levels and LDL-C goal attainment overall and by adherence subgroups** (adherent vs. non-adherent, PDC $\geq$ 0.8 was defined as adherent).
- Statistical analysis**
- Descriptive statistics were used to summarize all variables (mean  $\pm$  SD/median [IQR] for continuous variables; counts and proportions for categorical variables).
  - Comparisons between adherence subgroups were conducted using Student's t-test or Kruskal-Wallis test for continuous variables and Pearson's chi-square test for categorical variables, with statistical significance defined as P < 0.05.

## RESULTS

### 1. Baseline characteristics

- 10,571 PCSK9i users were included. They were old, and generally overweight.
- Median follow-up: 11.7 months (IQR 6.8 months).
- The most common comorbidities were **hypertension and diabetes**. Before treatment, 67.9% used **statin monotherapy** and 4.4% statin plus ezetimibe.
- Mean baseline LDL-C level was **3.3 mmol/L**, well above the recommended target of 2.6 mmol/L.

Table 1. Baseline Characteristics

	n/Mean	%/SD
<b>Demographic Characteristics</b>		
Age [Mean(SD)]	61.9	11.9
Male [n(%)]	6261	59.2%
BMI [Mean(SD)]	25.7	3.3
<b>Baseline Comorbidities [n(%)]</b>		
Hypertension	3723	35.2%
Diabetes	2329	22.0%
<b>Combination Therapy Before Enrollment [n(%)]</b>		
Statin monotherapy	7173	67.9%
Statin + ezetimibe	465	4.4%
<b>Baseline LDL-C Level [n(%)]</b>		
LDL-C [Mean(SD)]	3.3	1.1

### 2. Prescription patterns

- **49.7%** of patients received only **one PCSK9i prescription** (i.e., a single prescription record) during follow-up.
- Average prescription frequency: 2.5 times/person-year.
- The label only recommends Q2W or Q4W, but 54.4% of prescriptions were recorded as **"for current use"** (short-term use).

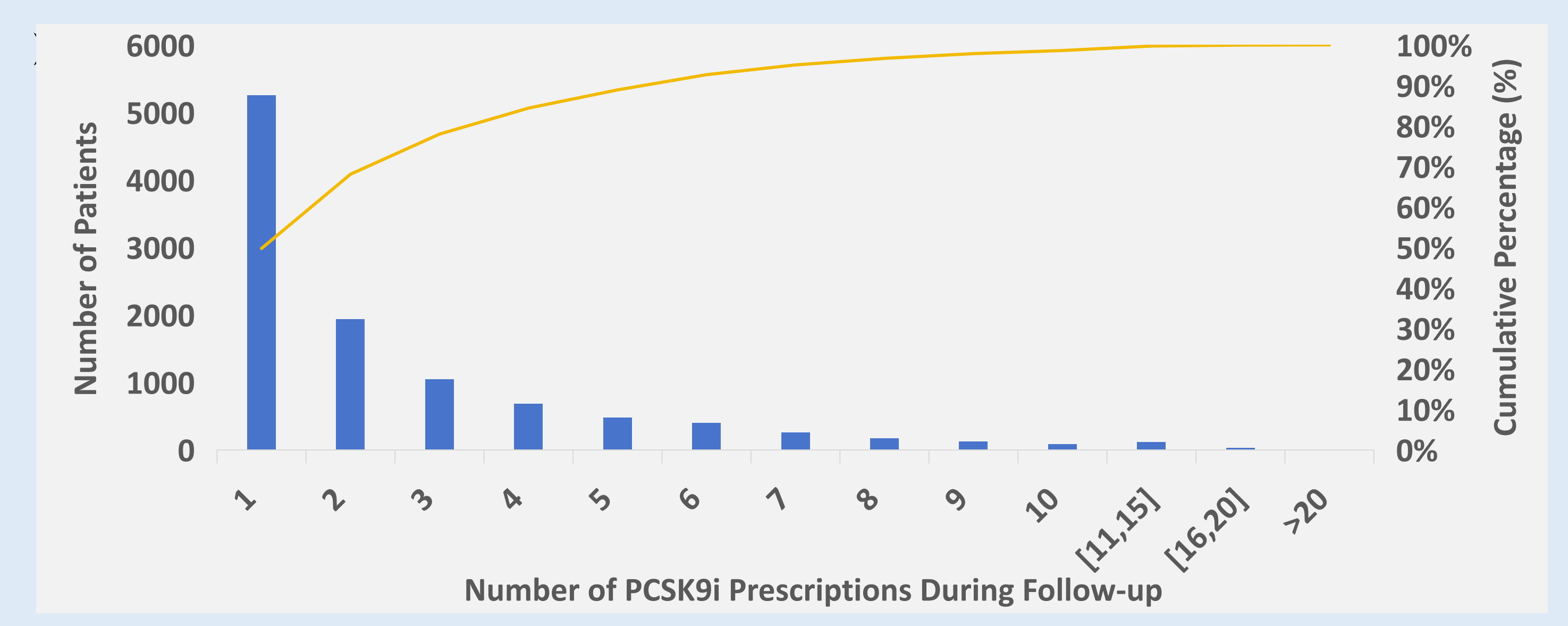


Figure 2. Distribution of the Number of PCSK9i Prescriptions During Follow-up

### 3. Adherence and persistence

- **Overall adherence was poor: mean proportion of days covered (PDC) was 0.3**, with a highly skewed distribution (median=0.1, IQR 0.3). Only 6.5% of patients achieved acceptable adherence (PDC  $\geq$  0.8).
- **Persistence was low: 75.5% of patients discontinued PCSK9i**, with a mean duration of continuous use of 73 days (median follow-up 11.7 months).
- **Reinitiation was uncommon:** among those who discontinued, only 24.0% restarted PCSK9i therapy.

Table 2. Adherence of PCSK9i

	Number /Mean	%/SD
PDC [Mean(SD)]	<b>0.3</b>	<b>0.8</b>
PDC Distribution [n(%)]		
[0, 0.2)	6738	63.7%
[0.2, 0.4)	1670	15.8%
[0.4, 0.6)	916	8.7%
[0.6, 0.8)	561	5.3%
[0.8, 1]	<b>686</b>	<b>6.5%</b>

Table 3. Persistence of PCSK9i

	Number /Mean	%/SD
Patients who discontinued PCSK9i [n(%)]	<b>7976</b>	<b>75.5%</b>
Duration of continuous PCSK9i use, days [Mean(SD)]		
	72.9	89.9
Number of patients who restarted after discontinuation [n(%)]		
	1916	24.0%

### 4. LDL-C outcomes

- Overall effect: Mean LDL-C decreased from 3.3 mmol/L at baseline to 2.1 mmol/L at 3 months (-1.2 mmol/L, -35.3%, P < 0.001). **LDL-C reductions were maintained at ~30% during follow-up**, though partial rebound was observed in the long-term.
- Subgroup differences: **Adherent users generally achieved greater LDL-C reductions and higher goal attainment** than non-adherent users, with significant differences at 6m, 9m, 12m, and 18m (all P < 0.05).

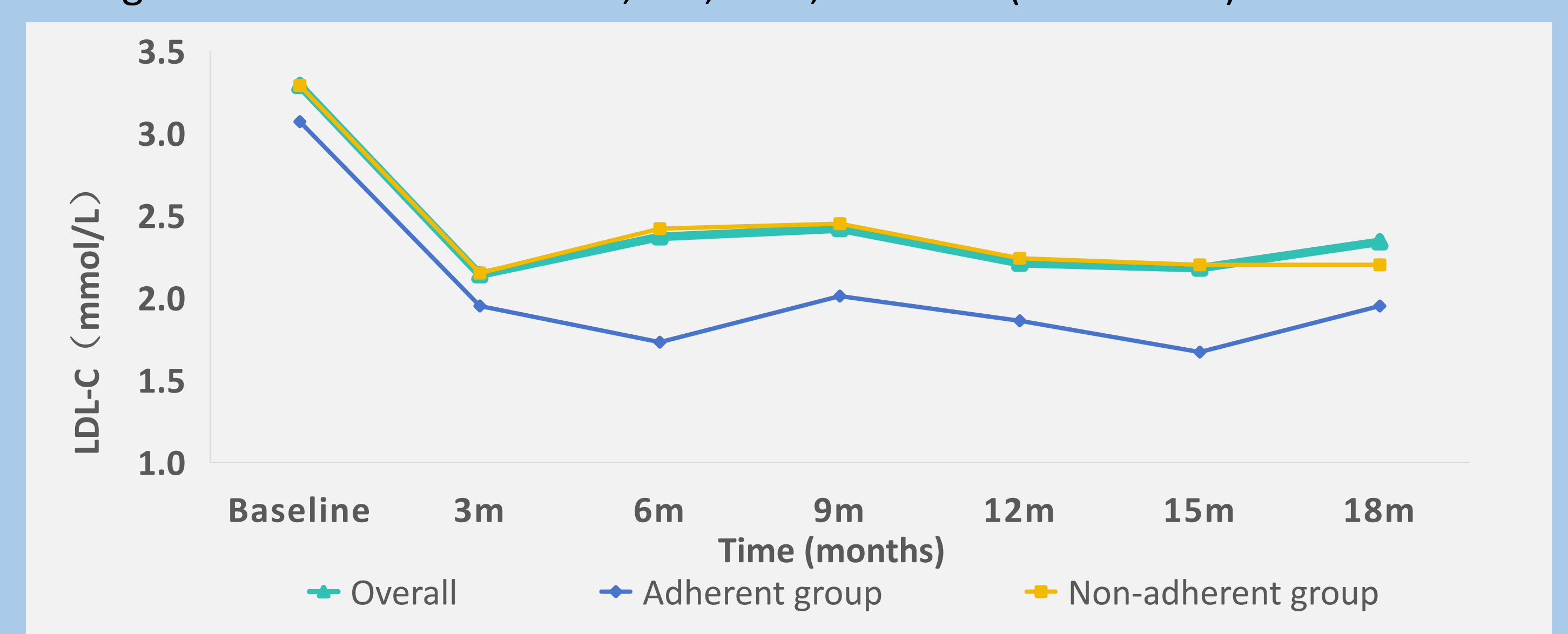


Figure 3. Follow-up LDL-C Trends

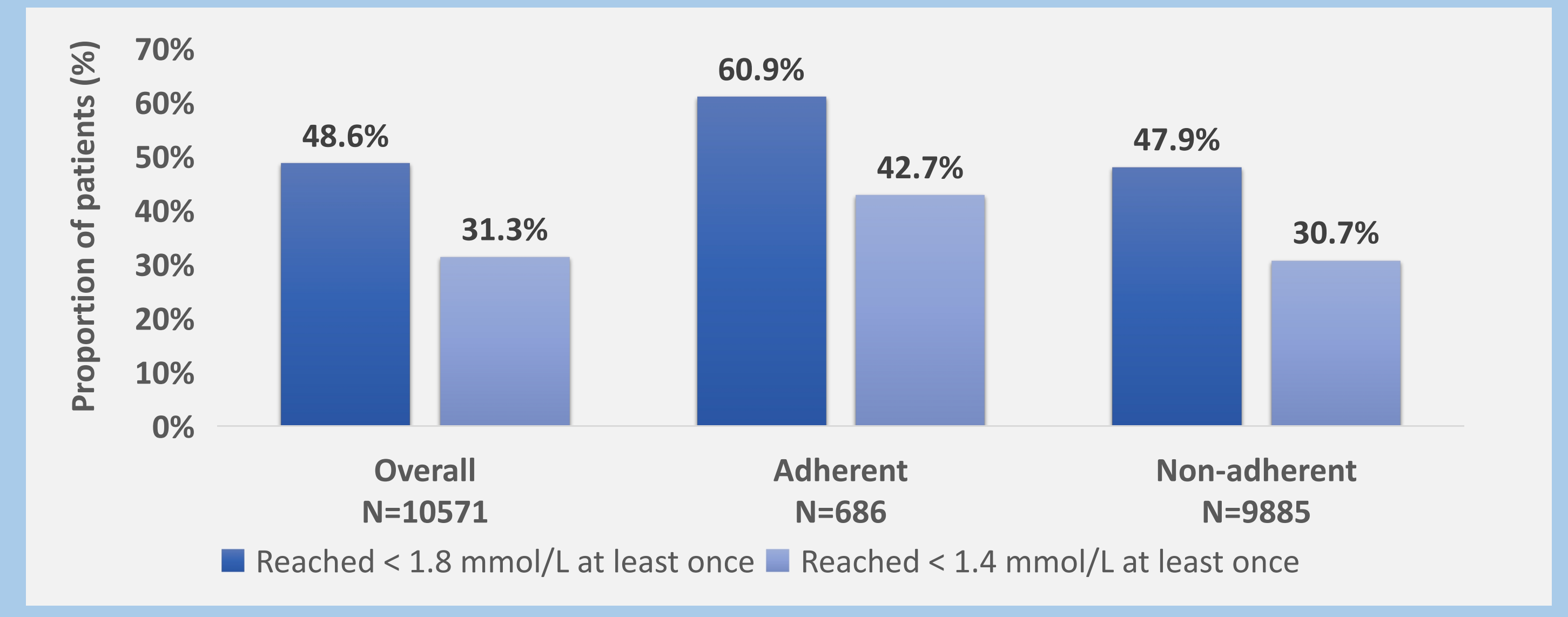


Figure 4. Follow-up LDL-C Goal Attainment

## CONCLUSIONS

- While injectable PCSK9i effectively lower LDL-C, suboptimal adherence limits their benefit. Targeted interventions—including follow-up management, patient education, and shared decision-making—are needed to improve long-term outcomes.

## References

1. Joint Committee on the Chinese Guidelines for Lipid Management. Chinese Guidelines for Lipid Management (2023). Chinese Journal of Cardiology 2023; 51:221-255. (in Chinese).
2. Gargiulo P, Basile C, Cesaro A, Marzano F, Buonocore D, Asile G, et al. Efficacy, safety, adherence and persistence of PCSK9 inhibitors in clinical practice: A single country, multicenter, observational study (AT-TARGET-IT). Atherosclerosis 2023;366:32-9.