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Rationale and design of the Early Initiation of Intensification Lipid-Lowering Treatment in Acute Coronary Syndrome (ELITE-ACS): a real-world study

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ABSTRACT

OBJECTIVE To investigate the effects of early in-hospital intensive lipid-lowering therapy (LLT) with proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors on lipid dynamics and clinical outcomes in Chinese acute coronary syndrome (ACS) patients, providing robust real-world evidence for its long-term benefits and optimal implementation timing to address the evidence gap in optimal lipid management for secondary prevention.

METHODS & RESULTS This multicenter prospective real-world study (http://www.clinicaltrials.gov, NCT number: NCT06738758), which building upon the ELEGANT pilot registry (ChiCTR2200065861), will enroll 6000 consecutively hospitalized ACS patients with uncontrolled dyslipidemia across more than 30 Chinese centers. Participants are enrolled based on recommended stratified proportions [(1) diagnostic categories: ST-segment elevation myocardial infarction : non-ST-segment elevation myocardial infarction : intermediate-high-risk unstable angina = 1:1:3; and (2) lipid-lowering strategies: PCSK9 inhibitor ± statin : statin+ezetimibe/hybutimibe : statin = 2:1:2). Treatment assignment reflects real-world clinical decisions guided by low-density lipoprotein cholesterol levels and patient preference. Twelve-month follow-up assessments were conducted at predefined intervals: baseline hospitalization, discharge, and 1, 3, 6, 12 months post-discharge. Primary endpoints were the goal attainment (low-density lipoprotein cholesterol < 1.4 mmol/L) rates across treatment arms. Key secondary endpoints were the major adverse cardiovascular events (including myocardial infarction, ischemic stroke, cardiovascular mortality, coronary revascularization) and all-cause death, and other secondary endpoints encompassed time-to-lipid-goal, longitudinal changes in lipids profiles and inflammatory biomarkers, and perivascular fat attenuation index evolution quantified by coronary computed tomographic angiography. Propensity score matching and inverse probability treatment weighting will address confounding bias.

CONCLUSIONS This study will pioneer evidence clarifying the optimal therapeutic window and clinical benefits of in-hospital intensive LLT for Chinese ACS patients. By establishing the first Chinese population-derived evidence for the "early intensive and rapid target attainment" strategy, our findings may challenge stepwise LLT paradigms. These results may guide international guideline updates for high-risk ACS populations, particularly in East Asian cohorts with distinct lipid profiles.

Acute coronary syndrome (ACS), encompassing ST-segment elevation myocardial infarction (STEMI), non-ST-segment elevation myocardial infarction (NSTEMI), and unstable angina (UA),[1] arises from unstable atherosclerotic plaque rupture or erosion in coronary arteries, leading to thrombus formation and acute myocardial ischemia. As the leading cause of cardiovascular mortality, optimizing secondary prevention strategies for ACS remains a critical challenge in clinical practice. Beyond acute phase interventions such as anticoagulation, antiplatelet therapy, and revascularization, lipid management plays a pivotal role in mitigating long-term risks.[2]

The first year post-ACS, particularly the initial 100 days, represents the highest-risk period for recurrent cardiovascular events, with cumulative rates of myocardial reinfarction, ischemic stroke, or cardiovascular death reaching 10%.[3] Current guidelines predominantly advocate a stepwise lipid-lowering approach: initiating moderate-intensity statins, reassessing low-density lipoprotein cholesterol (LDL-C) levels after 4–6 weeks, and escalating therapy with ezetimibe or proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors if LDL-C targets (< 1.4 mmol/L) remain unmet. Ho-

wever, this strategy may delay optimal lipid control for 8–12 weeks, precisely overlapping with the peak risk window for recurrent events. Real-world data reveal persistent gaps: although > 80% of ACS patients receive high-intensity statins at discharge, over half fail to achieve LDL-C targets within 6–8 weeks.[4] Post-discharge adjustments to lipid-lowering regimens are rare due to patient nonadherence and clinical inertia,[5] underscoring the urgency for more effective early intervention.

PCSK9 inhibitors offer a novel pathway to address these challenges. Landmark trials (FOURIER, ODYSSEY Outcomes) demonstrated that alirocumab and evolocumab reduce LDL-C by 54%–60% and lower major adverse cardiovascular events (MACEs) by 15%–20%.[6] While ODYSSEY Outcomes confirmed benefits in patients with recent ACS (1–12 months post-event),[7] critical gaps persist regarding the acute phase therapeutic window. Notably, plasma PCSK9 levels surge by 2.3-fold within 24 h of ACS onset,[8] potentially attenuating early statin efficacy and highlighting a mechanistic rationale for immediate PCSK9 inhibition. Early in-hospital initiation may stabilize vulnerable plaques via rapid LDL-C reduction and modulate inflammatory pathways,[9,10] yet practical barriers, such as acute phase hemodynamic instability, drug interactions, and real-world adherence, remain underexplored. Preliminary evidence from small trials (e.g., EVOPACS) supports short-term safety and efficacy,[11] but large-scale, prospective validation of long-term outcomes is lacking, especially in Chinese populations.

While randomized controlled trials remain the gold standard for efficacy assessment, real-world evidence is increasingly recognized by regulatory bodies (e.g., FDA RWE Framework 2023) for evaluating effectiveness in routine practice. Against this backdrop, the "Early Initiation of Intensification Lipid-Lowering Treatment in Acute Coronary Syndrome (ELITE-ACS)" study employs an innovative real-world design to address critical gaps in guideline implementation, particularly the "treatment inertia" observed in stepwise lipid management strategies. The primary objective is to evaluate the 1-year LDL-C target attainment rate (< 1.4 mmol/L) of early in-hospital intensive lipid-lowering therapy (LLT) (PCSK9 inhibitor initiated during hospitalization) compared with traditional stepwise strategies in Chinese ACS patients with uncontrolled dyslipidemia. This focus directly responds to the core mandate of resolving the low LDL-C goal attainment rate, a key barrier to secondary prevention in Chinese ACS populations. The key secondary objectives are designed to complement the primary endpoint with clinically meaningful outcomes, including assessing the incidence of MACEs and all-cause mortality at one year to validate the prognostic relevance of early LDL-C target attainment, and determining the time to LDL-C target achievement to quantify the speed of risk reduction. In summary, the ELITE-ACS study aims to provide dual evidence: whether early intensive LLT improves guideline adherence (process quality) and whether this translates to reduced cardiovascular risk (clinical benefit) in real-world practice.

METHODS

Study Design

The ELITE-ACS study is an ongoing multicenter, prospective, real-world study (http://www.clinicaltrials.gov, NCT number: NCT06738758) supported by Noncommunicable Chronic Diseases-National Science and Technology Major Project (No.2023ZD0503906) and initiated at the Chinese PLA General Hospital, which designed to enroll approximately 6000 hospitalized ACS patients across 30 Chinese medical centers between October 2024 and July 2026. It extends the scientific framework of its pilot phase, a registry named "Early initiation of PCSK9 inhibitor for Intensification Lipid Lower Treatment in hospitalized ACS patients (ELEGANT)" (ChiCTR2200065861), which was initiated in November 2022 at 13 centers. With a 12-month follow-up period, this study aims to evaluate the impact of early in-hospital initiation of PCSK9 inhibitor-based intensive LLT on 1-year lipid target achievement rates (LDL-C < 1.4 mmol/L), time-to-target attainment, and incidence of adverse cardiovascular events (Figure 1).

Study Population

Patients were eligible if they met the following criteria: (1) age ≥ 18 years; (2) hospitalization for ACS, including STEMI, NSTEMI and intermediate-high-risk UA which defined as Global Registry of Acute Coronary Events (GRACE) score ≥ 89 points; (3) inadequate lipid control: LDL-C ≥ 1.8 mmol/L for statin-treated patients or ≥ 2.6 mmol/L for statin-naive patients (no statin use within the preceding two weeks); and (4) provision of informed consent. Patients need to be excluded if they have any of the following: (1) prior PCSK9 inhibitor therapy within three months; (2) life-threatening comorbidities (e.g., severe hepatic impairment with persistent transaminase elevation, end-stage renal failure); (3) history of renal or cardiac transplantation; (4) pregnancy, lactation, or planned pregnancy; and (5) investigator-determined unsuitability for participation.

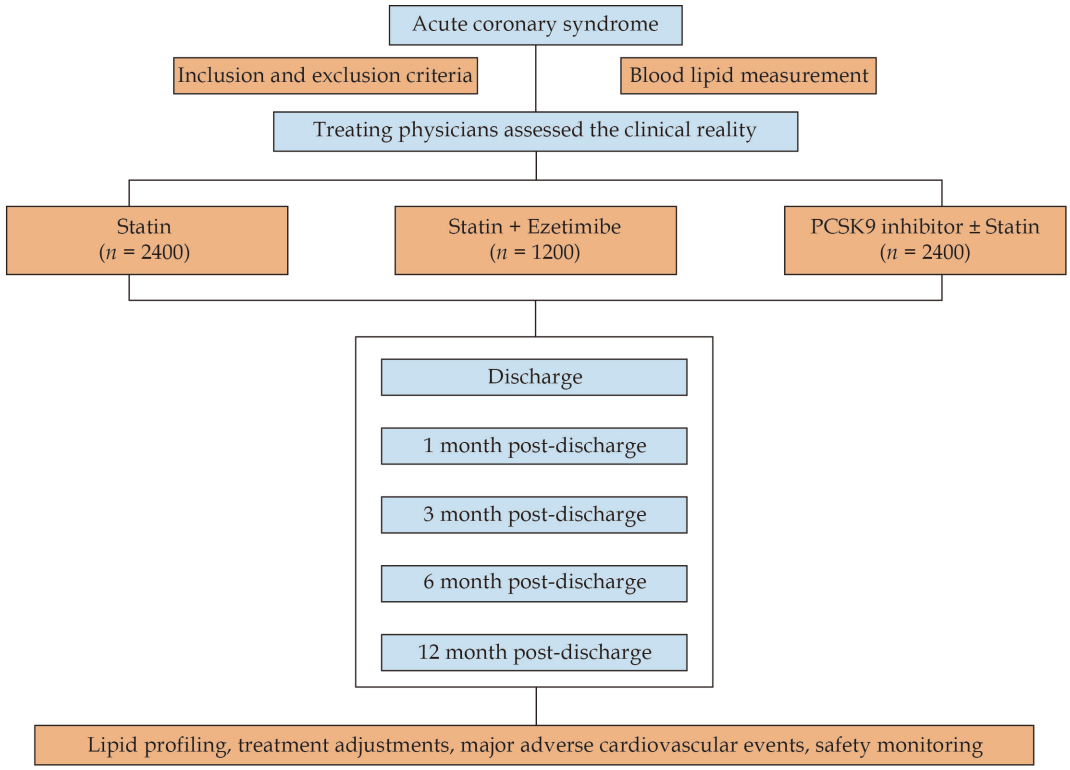

Figure 1 Study design and treatment schema of ELITE-ACS.

Interventions and Assessments

Participants are stratified by ACS diagnosis (STEMI : NSTEMI : intermediate-high-risk UA = 1:1:3) and treatment allocation (PCSK9 inhibitor ± statin : statin + ezetimibe/hybutimibe : statin = 2:1:2) based on recommended rather than mandatory proportions (Table 1). Treatment allocation ratios were deliberately selected to mirror real-world prescription patterns in Chinese ACS management and ensure sufficient statistical power for inter-group comparisons, aligning with the flexibility of real-world clinical decision-making. All other atherosclerotic cardiovascular disease (ASCVD) management therapies (e.g., antiplatelet agents, antihypertensives, hypoglycemics) align with contemporary Chinese and international guidelines[1,12] and clinician discretion.

Lipid-lowering agents and dosage recommendations

Based on pharmacokinetic characteristics of lipid-lowering agents in Chinese populations and data from previous real-world studies,[12,13] dosage recommendations are specified as follows: the statin monotherapy group prioritizes moderate-intensity potent statins as first-line therapy, including rosuvastatin (10–20 mg/day) or atorvastatin (20–40 mg/day), with de-escalation to low-intensity statins (rosuvastatin 5 mg/day or atorvastatin 10 mg/day) allowed for patients with statin intolerance (e.g., myalgia, transaminase elevation); the statin + ezetimibe/hybutimibe (both administered at a fixed dosage of 10 mg/day) combined with the aforementioned statins (dosage as specified for the statin monotherapy group); the PCSK9 inhibitor ± statin co-

Table 1 Stratification ratios by acute coronary syndrome diagnosis and lipid-lowering strategy.

	STEMI	NSTEMI	UA
PCSK9 inhibitor ± statin	480	480	1440
Statin + ezetimibe	240	240	720
Statin	480	480	1440

Ratios were dynamically adjusted during competitive enrollment to reflect real-world clinical decision-making with STEMI : NSTEMI : intermediate-high-risk UA = 1:1:3 and PCSK9 inhibitor ± statin : statin + ezetimibe/hybutimibe : statin = 2:1:2. NSTEMI: non-ST-segment elevation myocardial infarction; PCSK9: proprotein convertase subtilisin/kexin type 9; STEMI: ST-segment elevation myocardial infarction; UA: unstable angina.

mbination group includes four clinically approved PCSK9 inhibitors: alirocumab (75 mg every 2 weeks, adjustable to 150 mg every 2 weeks based on LDL-C response), evolocumab (140 mg every 2 weeks or 420 mg monthly), recaticimab (150 mg every 4 weeks or 300 mg every 8 weeks), and tafolecimab (150 mg every 2 weeks or 450 mg every 4 weeks), with optional concurrent statin therapy (dosage as specified above) based on patient tolerance and clinician judgment.

Treatment adjustment strategies

Long-term maintenance of LLT is recommended, with adjustments guided by serial LDL-C measurements and safety monitoring: for patients in the statin monotherapy group who fail to reach the LDL-C target (< 1.4 mmol/L) 1 month after dosage optimization, additional lipid-lowering agents (ezetimibe, hybutimibe, or PCSK9 inhibitor) may be added based on lipid profiles, patient preferences, and tolerability; for low LDL-C management, if LDL-C < 25 mg/dL (0.65 mmol/L) on two consecutive occasions (at least 24 h apart), the intensity of LLT should be reduced (e.g., statin dosage reduction or discontinuation of non-PCSK9 inhibitor agents), and if LDL-C < 15 mg/dL (0.39 mmol/L) on two consecutive occasions (at least 24 h apart), PCSK9 inhibitor therapy should be temporarily discontinued, with LDL-C reevaluated 3 weeks post-discontinuation and PCSK9 inhibitor reinitiated if LDL-C > 15 mg/dL; discontinuation or dosage reduction of lipid-lowering agents is permitted for severe adverse events (e.g., severe myopathy, persistent transaminase elevation > 3 × upper limit of normal) per product labels and guidelines. Complete and accurate documentation of all medication adjustments is required in accordance with the study protocol.

Data Collection and Management

Data are collected via electronic case report forms aligned with ACCF/AHA clinical data standards,[14] with secure electronic data capture accounts assigned to each participating hospital. Trained investigators or authorized personnel complete data entry timely and accurately, with online submission finalized by the mid-month following participant recruitment.

Baseline data (Admission visit)

At admission, the following baseline data were collected from patients: demographics (age, gender, height, weight); risk factors and medical history [smoking, alcohol consumption, previous percutaneous coronary intervention (PCI)/coronary artery bypass grafting, myocardial infarction (MI), heart failure, hypertension, peripheral arterial disease, diabetes mellitus, stroke, kidney disease]; prehospital medications [antiplatelet agents, lipid-lowering drugs, beta-adrenergic blockers (beta-blockers), angiotensin-converting enzyme inhibitors/angiotensin receptor blockers, aldosterone receptor antagonists, calcium channel blockers, proton pump inhibitors]; vital signs (blood pressure, heart rate, respiratory rate, pulse); laboratory parameters which includes complete blood count, infection markers [C-reactive protein/high-sensitivity C-reactive protein (hs-CRP), interleukin-6], blood biochemistry [alanine aminotransferase, aspartate aminotransferase, creatinine, B-type natriuretic peptide, glucose, glycated hemoglobin A1c, lipid profile ((LDL-C, high-density lipoprotein cholesterol (HDL-C), total cholesterol, triglycerides, lipoprotein(a), apolipoprotein A1, apolipoprotein B))], myocardial biomarkers (cardiac troponin T, cardiac troponin I, high-sensitivity cardiac troponin T, high-sensitivity cardiac troponin I, creatine kinase, creatine kinase-myocardial band); 12-lead electrocardiogram and echocardiographic findings; coronary angiographic data (lesion location, stenosis severity); interventional treatment details (PCI performance, intervention location) and discharge medications.

Follow-up data

Follow-up evaluations are conducted at discharge, and 1, 3, 6, and 12 months post-discharge via clinic visits or structured telephone interviews, with assessments including lipid profiling (LDL-C, HDL-C, total cholesterol, triglycerides) to guide treatment adjustments, adverse events and safety monitoring (liver/kidney function, muscle enzymes, new-onset diabetes mellitus), MACEs and healthcare utilization, and compliance with LLT (self-reported medication adherence, pill count at clinic visits).

Quality assurance

Data quality assurance employs a four-tiered strategy: (1) pre-study training with item-by-item guidance on data definitions; (2) automated and manual validation: the electronic data capture platform flags outliers or illogical entries for review; (3) on-site audits: a dedicated quality control team randomly selects the first, last, and ~10% of intermediate cases per site for source data verification against original medical records; and (4) real-time monitoring: weekly enrollment updates and monthly data quality reports are shared with sites to ensure compliance. All personal data are anonymized and processed in strict adherence to privacy laws, with technical and administrative safeguards (e.g., encryption, access con-

trols) to prevent unauthorized disclosure, loss, or alteration.

In particular, for patients who underwent coronary computed tomography angiography at baseline, perivascular fat attenuation index (FAI) measurement will be performed following strict standardization protocols to ensure inter-center and inter-observer consistency: raw coronary computed tomography angiography images from participating centers will be exported in DICOM (Digital Imaging and Communications in Medicine) format and transmitted securely to the leading center for centralized analysis. FAI will be measured independently by two experienced investigators blinded to clinical data and trained in a unified measurement protocol. Discrepancies between the two observers (defined as a relative difference > 10% in FAI values) will be resolved through joint review of the imaging slices, recalibration of measurement positions, and consensus discussion to align methodological implementation. Intra-observer and inter-observer reliability will be quantified using the intraclass correlation coefficient, with a pre-specified target intraclass correlation coefficient > 0.85 to confirm acceptable reproducibility.[15]

Study Endpoints and Definitions

Primary endpoint

The primary endpoint is LDL-C target achievement rate (< 1.4 mmol/L) at each visit node across follow-up intervals, per 2023 ESC guidelines.[1] Notably, the ≥ 50% LDL-C reduction criterion is excluded to prioritize absolute risk thresholds for clinical decision-making.

Secondary and safety endpoints

The key secondary endpoints are MACEs (composite of composite of MI, ischemic stroke, cardiovascular death and coronary revascularization) and all-cause mortality incidence, which are adjudicated using the Fourth Universal Definition of Myocardial Infarction[16] and 2023 ESC ACS guidelines.[1] Other endpoints include the mean time-to-LDL-C target attainment, which is defined as days from baseline to first confirmed LDL-C < 1.4 mmol/L, and the time from in-hospital initiation of LLT to first occurrence of any of the above MACEs and all-cause death, as well as the percentage changes in the full lipid profile (including LDL-C, total cholesterol, triglycerides, HDL-C, lipoprotein(a), apolipoprotein B and apolipoprotein A1, etc.) and inflammatory biomarkers (e.g., C-reactive protein/hs-CRP, interleukin-6) at each follow-up, and the percentage changes in FAI before the procedure and at 12 months in patients undergoing elective PCI. The safety endpoints include new-onset diabetes mellitus (fasting glucose ≥ 7.0 mmol/L or 2-hour postprandial glucose ≥ 11.1 mmol/L), hepatotoxicity (alanine aminotransferase > 3 × upper limit of normal), severe myopathy (creatine kinase > 10 × upper limit of normal) and severe hypersensitivity reactions. A complete list of pre-specified endpoints is included in Table 2. An independent clinical endpoint committee, blinded to treatment allocation, adjudicates all events using standardized criteria.

Prespecified subgroup analyzes and exploratory analyzes

Prespecified subgroup analyses encompass stratification by baseline clinical characteristics and their prognostic associations as well as stratification by core links of lipid management and their prognostic associations, where the former includes baseline risk stratification based on GRACE score[17] and presence or absence of very high-risk ASCVD, demographic and comorbidity stratification covering age, gender, chronic kidney disease status, and other comorbidities, and vascular lesion characteristic stratification focusing on presence or absence of multi-vessel disease and completeness of revascularization,[18] while the latter involves stratification by timing of LDL-C target attainment (in-hospital attainment, 1-month attainment, and 3-month attainment) and stratification by time in therapeutic range of LDL-C (defined as the proportion of follow-up duration with LDL-C maintained < 1.4 mmol/L) to explore its association with MACEs and all-cause death.

Exploratory analyses include the following four aspects: (1) baseline characteristics, including quantification of the proportion of very high-risk ASCVD among enrolled ACS patients, clarification of the distribution of dyslipidemia subtypes and different lipid-lowering drug combinations, as well as identification of factors influencing baseline lipid-lowering drug selection; (2) comprehensive management, including analysis of lipid-lowering drug adjustment patterns during follow-up, assessment of patient treatment adherence and its influencing factors, exploration of the clinical characteristics of the optimal population for different lipid-lowering strategies, and analysis of the low response rate and potential factors in patients receiving PCSK9 inhibitors alone; (3) multidimensional assessment of residual risk and mechanism exploration, including investigation of changes in residual cholesterol risk, residual inflammatory risk, metabolic risk and other residual risk factors across different lipid-lowering groups and their associations with prognosis, as well as development of a combined predictive model for prognostic risk based on multidimensional residual risk indica-

Table 2 Study endpoints.

Primary endpoint	LDL-C target achievement rate (< 1.4 mmol/L) at each visit node during the observation period
Secondary endpoint	The overall incidence of the first major adverse cardiovascular events (MACEs: composite of myocardial infarction, ischemic stroke, cardiovascular death and coronary revascularization) and all-cause death within 12 months
	The mean time-to-LDL-C target attainment (defined as days from baseline to first confirmed LDL-C < 1.4 mmol/L)
	Time from in-hospital initiation of lipid-lowering therapy to first occurrence of any of the above MACEs and all-cause death
	Percentage change from baseline in the full lipid profile (including LDL-C, high-density lipoprotein cholesterol, total cholesterol, triglycerides, lipoprotein(a), apolipoprotein A1, apolipoprotein B, etc.) across treatment groups at different visit nodes
	Percentage change from baseline in inflammatory biomarkers (e.g., C-reactive protein/high-sensitivity C-reactive protein, interleukin-6) across treatment groups at different visit nodes
	Percentage change in perivascular FAI in patients undergoing elective percutaneous coronary intervention
Prespecified subgroup analyses	Baseline clinical characteristics Baseline risk stratification including GRACE score, presence or absence of very high-risk atherosclerotic cardiovascular disease Demographic and comorbidity stratification covering age, gender, chronic kidney disease status, and other comorbidities Vascular lesion characteristic stratification focusing on presence or absence of multi-vessel disease and completeness of revascularization
	Core links of lipid management Timing of LDL-C target attainment (in-hospital attainment, 1-month attainment, and 3-month attainment) Time in therapeutic range of LDL-C (defined as the proportion of follow-up duration with LDL-C maintained < 1.4 mmol/L)
Exploratory analyses	Baseline characteristics Quantification of the proportion of very high-risk atherosclerotic cardiovascular disease among enrolled acute coronary syndrome patients Clarification of the distribution of dyslipidemia subtypes and different lipid-lowering drug combinations Identification of factors influencing baseline lipid-lowering drug selection
	Comprehensive management Analysis lipid-lowering drug adjustment patterns during follow-up Assessment of patient treatment adherence and its influencing factor Exploration of the clinical characteristics of the optimal population for different lipid-lowering strategies Analysis of the low response rate and potential factors in patients receiving PCSK9 inhibitors alone
	Multidimensional assessment of residual risk and mechanism exploration Changes in residual cholesterol risk, residual inflammatory risk, metabolic risk and other residual risk factors across different lipid-lowering groups and their associations with prognosis Development of a combined predictive model for prognostic risk based on multidimensional residual risk indicators
	Association between imaging mechanisms and prognosis in patients undergoing elective percutaneous coronary intervention Analysis of the correlation between 12-month changes in perivascular FAI measured by coronary computed tomography angiography compared with baseline and MACEs and all-cause death The intrinsic associations between 12-month FAI changes and LDL-C reduction and changes in inflammatory factors
Safety endpoints	New-onset diabetes mellitus (fasting glucose ≥ 7.0 mmol/L or 2-hour postprandial glucose ≥ 11.1 mmol/L)
	Hepatotoxicity (alanine aminotransferase > 3 × upper limit of normal)
	Severe myopathy (creatine kinase > 10 × upper limit of normal)
	Severe hypersensitivity reactions

FAI: fat attenuation index; LDL-C: low-density lipoprotein cholesterol; MACEs: major adverse cardiovascular events; PCSK9: proprotein convertase subtilisin/kexin type 9.

tors; and (4) association between imaging mechanisms and prognosis in patients undergoing elective PCI, including analysis of the correlation between 12-month changes in perivascular FAI measured by coronary computed tomography angiography compared with baseline and MACEs and all-cause death, as well as the intrinsic associations between 12-month FAI changes and LDL-C reduction and changes in inflammatory factors.

Statistical Analysis

Sample size rationale

As a real-world observational study without mandatory group allocation ratios, the planned enrollment of 6000 patients is comprehensively justified based on both the declared primary endpoint and key secondary clinical events (MACEs), combined with expected real-world treatment distri-

bution (PCSK9 inhibitor ± statin : statin + ezetimibe/hybutimibe : statin = 2:1:2). First, for the primary endpoint (LDL-C target achievement rate < 1.4 mmol/L), drawing on contemporary real-world data in Chinese ACS patients,[19,20] we assumed target achievement rates of 58%, 25%, and 18% across the three groups; power analysis confirms this sample size provides > 80% power (α = 0.05) for all pairwise comparisons of the primary endpoint, ensuring sufficient statistical power to validate the core research objective. Second, for key secondary clinical events (MACEs and all-cause death), referencing prior clinical and real-world evidence [a coronary imaging trial reported a 12-month MACE rate of 11% with alirocumab versus 21.9% with placebo in ACS patients;[21] a Taiwanese registry showed 1-year revascularization rates of 14% (statin monotherapy) *vs.* 8.5% (statin + ezetimibe)],[22] power analysis indicates the 6000 patients' sample also provides > 90% power (α = 0.05) for comparisons between PCSK9 inhibitor ± statin *vs.* statin alone and between statin + ezetimibe/hybutimibe *vs.* statin alone, as well as > 50% power for comparisons between PCSK9 inhibitor ± statin *vs.* statin + ezetimibe/hybutimibe. To address multiplicity issues and avoid inflated type I error, a hierarchical testing strategy with Bonferroni correction for key comparisons (intensive *vs.* conventional therapy) is adopted to strictly control statistical error.

Analytical methods

Analyzes will be performed using SPSS 26.0 (SPSS Inc., Armonk, New York, USA) and R statistical software 4.2.1 (R Foundation for Statistical Computing, Vienna, Austria). For descriptive statistics and primary endpoint analysis, continuous variables will be presented as mean ± SD for normally distributed data or medians (interquartile range) for non-normally distributed data, with intergroup comparisons conducted via one-way analysis of variance or Kruskal-Wallis *H* test, respectively; categorical variables will be summarized as counts (percentages) and compared using the Pearson's chi-squared test or the Fisher's exact probability test for expected frequencies < 5. The primary endpoint (LDL-C target attainment rate) will be analyzed under the intention-to-treat principle, including all participants followed for 12 months regardless of protocol deviations, with pairwise intergroup comparisons adjusted via the Holm-Bonferroni method to control for type I error from multiple comparisons. Predefined subgroup analyses will be conducted to explore effect modification by age, baseline LDL-C level, inflammatory status, and timing of target attainment, with interaction tests applied to assess subgroup differences. For confounding adjustment, propensity scores will be estimated using a logistic regression model incorporating > 20 clinically relevant covariates, including demographics (age, sex, body mass index, smoking status, alcohol consumption), clinical history (hypertension, diabetes mellitus, chronic kidney disease or estimated glomerular filtration rate, prior ACS, prior stroke, heart failure), ACS-specific variables [ACS subtype (STEMI/NSTEMI/UA), baseline LDL-C, hs-CRP, troponin, left ventricular ejection fraction], concurrent medications (antiplatelet agents, anticoagulants, beta-blockers, angiotensin-converting enzyme inhibitors/angiotensin receptor blockers, diuretics). Inverse probability treatment weighting (IPTW) will be employed, with weights truncated at the 1st and 99th percentiles (range: 0.1–10.0) to reduce bias from extreme values, and weight balance will be verified using standardized mean differences (< 0.1). Continuous covariates will be modeled as linear terms for normally distributed data or log-transformed for non-normally distributed data (e.g., hs-CRP, troponin), with restricted cubic splines (3 knots) applied to test for nonlinear relationships, and significant nonlinear terms retained in the final model. For secondary endpoint analysis, composite MACEs will be analyzed using Kaplan-Meier survival curves, log-rank tests, and IPTW-adjusted Cox proportional hazards models, with the Cox proportional hazards assumption validated via Schoenfeld residuals. Individual MACE components (MI, ischemic stroke, cardiovascular death, coronary revascularization) will be evaluated using Fine-Gray competing risk models with non-cardiovascular death as the competing event. Time-to-LDL-C target attainment will be assessed via Kaplan-Meier curves and log-rank tests, with non-attainers censored at 12 months, while longitudinal changes in LDL-C, inflammatory biomarkers and FAI will be analyzed using mixed-effects models for repeated measures, adjusting for baseline values, treatment group, time points, and group-time interactions. For survival analysis details, a two-step covariate adjustment strategy will be adopted for survival analyses: unadjusted (crude hazard ratio) and IPTW-adjusted models incorporating propensity score weights and residual confounders with standardized mean differences > 0.1 after weighting. Continuous predictors will be handled using restricted cubic splines (3 knots) to capture potential nonlinear associations with survival outcomes, and competing risks will be addressed in the analysis of individual MACEs components. For missing data and bias mitigation, missing data with < 30% missingness will be addressed via multiple imputation by chained equations with 20 imputed datasets, including all baseline covariates, treatment group, and outcomes; variables with ≥ 30% missingness will be analyzed as a separate subgroup. Attrition bias will be mitigated by characterizing attrition patterns across treatment groups, applying inverse probability of attrition weighti-

ng to the intention-to-treat population (weights estimated via logistic regression predicting follow-up completion, incorporating baseline characteristics, treatment group, and early adverse events), and conducting predefined sensitivity analyzes: per-protocol analysis (excluding participants with major protocol deviations, i.e., non-adherence > 20% or treatment switching), alternative weight truncation thresholds (0.05–20.0) for IPTW, complete-case analysis (*vs.* multiple imputation by chained equations) to assess result robustness. For additional analyzes, Cox regression and restricted cubic splines will be used to explore associons between time-dependent LDL-C levels and MACE risk, while group-based trajectory modeling (Bayesian information criterion-optimized) will be employed to identify distinct LDL-C response patterns and their prognostic implications. And FAI will be primarily analyzed as a continuous variable. If clinically meaningful thresholds or dose-response relationships are identified, FAI will be further categorized into tertiles/quartiles based on baseline distributions to explore outcome differences across FAI strata. Statistical significance will be defined as a two-sided P-value < 0.05 after Holm-Bonferroni adjustment for multiple comparisons.

Study Governance

This prospective cohort study comprises two sequential phases necessitated by research scale expansion and funding source transition. The investigation originated as an investigator-initiated trial (ELEGANT) launched by the Department of Cardiovascular Medicine, Chinese PLA General Hospital in November 2022. Registered at the Chinese Clinical Trial Registry (ChiCTR2200065861), the project transitioned to a national-level research program (ELITE-ACS) in August 2024 with subsequent registration on ClinicalTrials.gov (http://www.clinicaltrials.gov, NCT number: NCT06738758). Crucially, all data collection standards, interventions, and endpoint definitions remain consistent across both phases. A central project management team oversees data governance, analysis, safety monitoring, and endpoint adjudication. Participating sites (more than 30 hospitals across China) represent diverse secondary and tertiary care settings. The two phases of this study were all approved by the Ethics Committee of Chinese PLA General Hospital, Beijing, China (No.S2022-571 & No.S2024-730) and all participating institutions. Conduct adheres to the Declaration of Helsinki, Good Clinical Practice, and local regulations. Written informed consent is obtained from all participants or legally authorized representatives. The authors assume full responsibility for study design, execution, data interpretation, manuscript preparation, and final content.

Study Progress and Current Status

From November 2022 to June 2025, 23 active centers enrolled 1849 participants, achieving 30.82% (1849/6000) of the target sample size. This cohort spans > 10 Chinese provinces/municipalities, demonstrating significant geographical representation. Core laboratory measurements (notably LDL-C) were missing in < 3% (n = 55) of participants at baseline. Follow-up assessments at 1-month post-enrollment were completed in 76.4% (n = 1253) of eligible participants, with core lipid profiles available for 62.84% (n = 1162). Subsequent follow-up completion rates were 76.9% at 3 months and 70.9% at 6 months. Full enrollment of the target 6000 participants is projected by June 2026.

DISCUSSION

The ELITE-ACS study aims to address the critical clinical challenges in China, suboptimal lipid target attainment (30%–40%) and persistently high risks of recurrent cardiovascular events among ACS patients, through a pioneering multicenter real-world cohort study of 6000 participants. This study systematically evaluates the impact of early in-hospital initiation of PCSK9 inhibitor-based intensive LLT on rapid LDL-C target achievement (LDL-C < 1.4 mmol/L) and 1-year cardiovascular outcomes. Unlike traditional randomized controlled trials, this design innovatively simulates real-world clinical decision-making by adopting recommended rather than mandatory proportions for stratification by ACS presentation and lipid-lowering strategies. By integrating dense follow-up intervals (six visits) and multidimensional endpoints (time-to-LDL-C target, MACE, noninvasive imaging biomarkers), this study uniquely dissects the clinical benefits of early intensive therapy from the perspectives of speed (rapid LDL-C reduction), depth (magnitude of lipid-lowering), and breadth (multisystemic outcomes). The findings will bridge the evidence gap in international guidelines regarding early intervention strategies for Chinese populations and provide pivotal evidence-based support for optimizing ACS lipid management pathways tailored to China's healthcare landscape.

Lipid management remains a cornerstone of ACS prognosis improvement, yet China faces unique challenges. Nationwide surveys reveal alarmingly low LDL-C target attainment rates (< 1.8 mmol/L in 11.7% of hospitalized ACS patients), with 92.0% receiving statin monotherapy at discharge and minimal post-discharge regimen adjustments, 91.4% remained on statin monotherapy at 6-month follow-up, and only 30.1% achieved LDL-C < 1.8 mmol/L upon rehospitalization.[23,24] These shortcomings contribute to residual risk-

driven recurrent cardiovascular events (e.g., MI, revascularization) that exceed global rates.[25,26] This crisis is tightly linked to guideline-recommended stepwise therapy, where delayed LDL-C control may miss the critical "metabolic intervention window" during the acute ACS phase, a period marked by lipid core exposure post-plaque rupture, inflammatory activation, and endothelial repair.[27] Preclinical studies further suggest that acute phase LDL-C reduction mitigates plaque macrophage infiltration and enhances endothelial healing, while early intervention may confer long-term anti-inflammatory benefits via monocyte phenotype modulation (e.g., M1-to-M2 polarization).[28–30] Notably, a meta-analysis highlights that cardiovascular risk reduction per 1 mmol/L LDL-C decline is not static but increases with prolonged treatment duration,[31] reinforcing the 2023 Chinese lipid guidelines' emphasis on sustained target attainment.

Recent advances in PCSK9 inhibitor therapy have enabled rapid and substantial LDL-C reduction. Large-scale trials, including FOURIER and ODYSSEY Outcomes, have confirmed their efficacy in lowering LDL-C and reducing cardiovascular events in patients with dyslipidemia or ASCVD.[32,33] Notably, the ODYSSEY Outcomes trial demonstrated benefits in patients with recent ACS (1–12 months post-event).[7] However, despite guideline recommendations emphasizing early intensive lipid-lowering for ACS patients, such as the 2023 ESC guidelines advocating "initiating combination therapy as early as possible",[1] critical ambiguities remain. The definition of "early" (e.g., during hospitalization, pre-discharge, or within 30 days), prioritization of PCSK9 inhibitors, optimal combination regimens, and monitoring protocols lack specificity. While trials like EVOPACS[11] and HUYGENS[34] established the safety of early PCSK9 inhibitor use in ACS, their strict eligibility criteria (e.g., excluding hemodynamically unstable patients) limit generalizability. Ongoing real-world studies, such as AMUNDSEN and EVOLVE-MI, focus on in-hospital evolocumab use but do not assess LDL-C reduction velocity, time-to-target attainment, or associations with post-discharge outcomes.

The ELITE-ACS study addresses these gaps through its large-scale, real-world cohort design. By incorporating diverse clinical scenarios and simulating individualized decision-making, this study evaluates not only LDL-C trajectories and MACEs but also integrates noninvasive imaging biomarkers (e.g., FAI) to comprehensively assess early intervention benefits. Furthermore, its pragmatic design aligns with China's healthcare policies, enabling cost-effectiveness comparisons between early intensive therapy and stepwise approaches. Should results demonstrate favorable incremental cost-effectiveness ratios for early intervention, they may inform guideline updates, potentially elevating "PCSK9 inhibitor initiation within 24 h" to a class IIa recommendation for high-risk populations. Therefore, as the first large-scale, real-world study integrating dynamic risk stratification and multidimensional endpoint assessment (lipid kinetics, plaque imaging, and health economics), it pioneers a paradigm-shifting framework for precision lipid management. By generating China-specific evidence on early intensive therapy's efficacy, safety, and cost-utility, this study not only empowers national guideline optimization but also establishes a replicable model for emerging economies grappling with dual burdens of atherosclerotic disease and healthcare disparities.

It is important to note that several protocol revisions were made during the study design phase to enhance real-world feasibility and evidence comparability, which are reflected in the final protocol: first, the pre-enrollment lipid-lowering medication duration was adjusted from four weeks to two weeks to align with the inclusion criteria of international pivotal PCSK9 inhibitor trials (FOURIER and ODYSSEY studies), ensuring our results are comparable with high-level global evidence; second, stratification ratios for ACS subtypes and treatment allocation were revised based on real-world epidemiological data and clinical practice: the ACS diagnosis ratio (1:1:3) reflects the latest epidemiological characteristics of Chinese coronary heart disease inpatients (per Annual Report on Cardiovascular Health and Diseases in China 2024, STEMI, NSTEMI, and UA account for more than 6.8%, 6.3%, and 40% of hospitalizations, respectively), while the adjusted treatment allocation ratio (2:1:2) adapts to the current clinical reality where PCSK9 inhibitors are increasingly widely used and ezetimibe utilization has declined, ensuring timely study completion; third, the in-hospital follow-up nodes were simplified to only the discharge visit (removing the 3-day post-treatment visit), addressing practical challenges of medical insurance policy restrictions and poor patient compliance in real-world settings; finally, we optimized and expanded prespecified subgroup analyses and exploratory endpoints to enhance the study's clinical relevance and translational value. We supplemented subgroup stratification by baseline clinical characteristics and core links of lipid management, also we structured exploratory endpoints into four domains with added clinical analyses. These optimizations address unmet clinical needs and strengthen the study's potential to inform clinical practice and guideline updates.

Despite rigorous design, this study faces inherent limitations. Selection bias may arise, as higher-risk patients might preferentially receive PCSK9 inhibitors. To address this potential bias, our study adopts recommended rather than mand-

atory treatment allocation proportions (PCSK9 inhibitor ± statin accounting for 40%), which aligns with contemporary real-world prescription patterns in Chinese ACS management and avoids artificial overrepresentation or underrepresentation of any treatment group. Furthermore, we conducted dynamic adjustment and advanced statistical methods: propensity score adjustment for baseline covariates, sensitivity analyzes comparing multiple models, and time-dependent covariate analyzes to account for treatment modifications. Nonetheless, unmeasured confounders may persist. Additionally, despite center expansion during the study period necessitated by funding source transition, rigorous quality control measures, including standardized investigator training programs, deployment of electronic case report forms with built-in logic checks, and centralized endpoint adjudication by an independent committee, were systematically implemented to ensure methodological consistency and data uniformity across all participating sites. Moreover, comorbidity burden is a key determinant of prognosis and treatment response in ACS patients, with validated indices such as the Charlson Comorbidity Index demonstrating robust predictive value for in-hospital mortality and long-term cardiovascular events.[35] However, the present real-world study is limited by incomplete comorbidity data, a common challenge in real-world research attributed to inconsistent documentation of non-core conditions in routine clinical practice. While we collected baseline data on major cardiovascular-related comorbidities (e.g., diabetes mellitus, renal disease, stroke), we lacked comprehensive records of all 19 conditions required for full Charlson Comorbidity Index calculation, precluding reliable comorbidity index-based subgroup analyses. Despite this limitation, our findings on LLT efficacy and safety remain clinically relevant, as they reflect real-world populations where comorbidity documentation often prioritizes conditions directly influencing acute management. Future research should address this gap by leveraging integrated electronic health records systems with standardized comorbidity coding, enabling systematic collection of comprehensive comorbidity data and validation of simplified, clinically meaningful comorbidity indices for ACS populations. Such efforts would facilitate more precise stratification of patients based on comorbidity burden, optimizing the delivery of intensive LLT and improving outcomes in this high-risk group. Finally, the 1-year follow-up may be insufficient to evaluate long-term plaque stabilization (e.g., calcification transition), while our study prioritizes assessment during the peak vulnerability period post-ACS, which aligns with recent consensus statements. Future studies should extend observation periods to assess legacy effects.

CONCLUSIONS

The ELITE-ACS study, enrolling 6000 Chinese ACS patients, is positioned to clarify the optimal timing and clinical benefits of early in-hospital intensive LLT. As the first large-scale, real-world evidence from a Chinese cohort, this study provides critical support for the "early intensive and rapid target attainment" strategy. Findings are expected to refine ACS lipid management protocols, inform guideline updates, and ultimately contribute to improving clinical prognosis by addressing the unmet need for timely and effective lipid control in high-risk populations.

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REFERENCES

[1] Byrne RA, Rossello X, Coughlan JJ, *et al.* 2023 ESC guidelines for the management of acute coronary syndromes. *Eur Heart J* 2023; 44: 3720−3826.
[2] Claessen BE, Guedeney P, Gibson CM, *et al.* Lipid management in patients presenting with acute coronary syndromes: a review. *J Am Heart Assoc* 2020; 9: e018897.
[3] Jernberg T, Hasvold P, Henriksson M, *et al.* Cardiovascular risk in post-myocardial infarction patients: nationwide real world data demonstrate the importance of a long-term perspective. *Eur Heart J* 2015; 36: 1163−1170.
[4] Allahyari A, Jernberg T, Hagström E, *et al.* Application of the 2019 ESC/EAS dyslipidaemia guidelines to nationwide data of patients with a recent myocardial infarction: a simulation study. *Eur Heart J* 2020; 41: 3900−3909.
[5] Krychtiuk KA, Ahrens I, Drexel H, *et al.* Acute LDL-C reduction post ACS: strike early and strike strong: from evidence to clinical practice. A clinical consensus statement of the Association for Acute CardioVascular Care (ACVC), in collaboration with the European Association of Preventive Cardiology (EAPC) and the European Society of Cardiology Working Group on Cardiovascular Pharmacotherapy. *Eur Heart J Acute Cardiovasc Care* 2022; 11: 939-949.
[6] Bodapati AP, Hanif A, Okafor DK, *et al.* PCSK-9 inhibitors and cardiovascular outcomes: a systematic review with meta-analysis. *Cureus* 2023; 15: e46605.
[7] Schwartz GG, Steg PG, Szarek M, *et al.* Alirocumab and cardiovascular outcomes after acute coronary syndrome. *N Engl J Med* 2018; 379: 2097−2107.
[8] Cariou B, Guérin P, Le May C, *et al.* Circulating PCSK9 levels in acute coronary syndrome: results from the PC-SCA-9 prospective study. *Diabetes Metab* 2017; 43: 529−535.
[9] Ou Z, Yu Z, Liang B, *et al.* Evolocumab enables rapid LDL-C reduction and inflammatory modulation during in-hospital stage of acute coronary syndrome: a pilot study on Chinese patients. *Front Cardiovasc Med* 2022; 9: 939791.
[10] Frostegård J. The role of PCSK9 in inflammation, immunity, and autoimmune diseases. *Expert Rev Clin Immunol* 2022; 18: 67−74.
[11] Koskinas KC, Windecker S, Pedrazzini G, *et al.* Evolocum-

ab for early reduction of LDL cholesterol level in patient with acute coronary syndromes (EVOPACS). *J Am Coll Cardiol* 2019; 74: 2452–2462.
[12] Li JJ, Zhao SP, Zhao D, *et al*. 2023 China guidelines for lipid management. *J Geriatr Cardiol* 2023; 20: 621–663.
[13] Zhao SP, Yu BL, Peng DQ, *et al*. The effect of moderate-dose versus double-dose statins on patients with acute coronary syndrome in China: results of the CHILLAS trial. *Atherosclerosis* 2014; 233: 707–712.
[14] Anderson HV, Weintraub WS, Radford MJ, *et al*. Standardized cardiovascular data for clinical research, registries, and patient care: a report from the Data Standards Workgroup of the National Cardiovascular Research Infrastructure project. *J Am Coll Cardiol* 2013; 61: 1835–1846.
[15] Yu Y, Shan D, Wang X, *et al*. Predictive value of the perivascular fat attenuation index for MACE in young people suspected of CAD. *BMC Cardiovasc Disord* 2025; 25: 80.
[16] Thygesen K, Alpert JS, Jaffe AS, *et al*. Fourth universal definition of myocardial infarction (2018). *Circulation* 2018; 138: e618–e651.
[17] Georgiopoulos G, Kraler S, Mueller-Hennessen M, *et al*. Modification of the GRACE risk score for risk prediction in patients with acute coronary syndromes. *JAMA Cardiol* 2023; 8: 946–956.
[18] Rao SV, O'Donoghue ML, Ruel M, *et al*. 2025 ACC/AHA/ACEP/NAEMSP/SCAI guideline for the management of patients with acute coronary syndromes: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation* 2025; 151: e771–e862.
[19] Liu YQ, Li DD, Chai M, *et al*. Real world effectiveness of PCSK-9 inhibitors combined with statins versus statins-based therapy among patients with very high risk of atherosclerotic cardiovascular disease in China (RWE-PCSK study). *J Geriatr Cardiol* 2021; 18: 261–270.
[20] Cheng Y, Dong S, Shen P, *et al*. Achievement of low-density lipoprotein cholesterol targets in Chinese patients with atherosclerotic cardiovascular disease after receiving statins and ezetimibe. *Front Cardiovasc Med* 2022; 9: 988576.
[21] Räber L, Ueki Y, Otsuka T, *et al*. Effect of alirocumab added to high-intensity statin therapy on coronary atherosclerosis in patients with acute myocardial infarction: the PACMAN-AMI randomized clinical trial. *JAMA* 2022; 327: 1771–1781.
[22] Lin CF, Gau CS, Wu FL, *et al*. Impact of ezetimibe coadministered with statins on cardiovascular events following acute coronary syndrome: a 3-year population-based retrospective cohort study in Taiwan. *Clin Ther* 2011; 33: 1120–1131.
[23] Gong Y, Li X, Ma X, *et al*. Lipid goal attainment in post-acute coronary syndrome patients in China: results from the 6-month real-world dyslipidemia international study II. *Clin Cardiol* 2021; 44: 1575–1585.
[24] Xing Y, Liu J, Hao Y, *et al*. Prehospital statin use and low-density lipoprotein cholesterol levels at admission in acute coronary syndrome patients with history of myocardial infarction or revascularization: findings from the Improving Care for Cardiovascular Disease in China (CCC) project. *Am Heart J* 2019; 212: 120–128.
[25] Huo Y, Lee SW, Sawhney JPS, *et al*. Two-year outcomes post-discharge in Asian patients with acute coronary syndrome: findings from the EPICOR Asia study. *Int J Cardiol* 2020; 315: 1–8.
[26] Song J, Murugiah K, Hu S, *et al*. Incidence, predictors, and prognostic impact of recurrent acute myocardial infarction in China. *Heart* 2020; 107: 313–318.
[27] Krychtiuk KA, Ahrens I, Drexel H, *et al*. Acute LDL-C reduction post ACS: strike early and strike strong: from evidence to clinical practice. A clinical consensus statement of the Association for Acute CardioVascular Care (ACVC), in collaboration with the European Association of Preventive Cardiology (EAPC) and the European Society of Cardiology Working Group on Cardiovascular Pharmacotherapy. *Eur Heart J Acute Cardiovasc Care* 2022; 11: 939-949.
[28] Schuster S, Rubil S, Endres M, *et al*. Anti-PCSK9 antibodies inhibit pro-atherogenic mechanisms in APOE*3Leiden. *CETP mice. Sci Rep* 2019; 9: 11079.
[29] Yang J, Ma X, Niu D, *et al*. PCSK9 inhibitors suppress oxidative stress and inflammation in atherosclerotic development by promoting macrophage autophagy. *Am J Transl Res* 2023; 15: 5129–5144.
[30] Fang F, Xiao C, Li C, *et al*. Tuning macrophages for atherosclerosis treatment. *Regen Biomater* 2022; 10: rbac103.
[31] Burger PM, Dorresteijn JAN, Koudstaal S, *et al*. Course of the effects of LDL-cholesterol reduction on cardiovascular risk over time: a meta-analysis of 60 randomized controlled trials. *Atherosclerosis* 2024; 396: 118540.
[32] Lambert G, Sjouke B, Choque B, *et al*. The PCSK9 decade. *J Lipid Res* 2012; 53: 2515–2524.
[33] Pasta A, Cremonini AL, Pisciotta L, *et al*. PCSK9 inhibitors for treating hypercholesterolemia. *Expert Opin Pharmacother* 2020; 21: 353–363.
[34] Nicholls SJ, Kataoka Y, Nissen SE, *et al*. Effect of evolocumab on coronary plaque phenotype and burden in statin-treated patients following myocardial infarction. *JACC Cardiovasc Imaging* 2022; 15: 1308–1321.
[35] Zhang F, Wong C, Chiu Y, *et al*. Prognostic impact of comorbidity measures on outcomes following acute coronary syndrome: a systematic review. *Int J Clin Pract* 2021; 75: e14345.

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