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Short communication

Achievement of LDL-C and non-HDL-C treatment targets in very-high cardiovascular risk patients after myocardial infarction: implications for pharmacist-supported lipid management

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Introduction

Dyslipidaemia is a major modifiable determinant of atherosclerotic cardiovascular disease (ASCVD), and LDL-C remains the primary therapeutic target in prevention. Patients with established ASCVD, particularly after acute myocardial infarction (AMI) and coronary revascularization, are classified as very high risk and require intensive lipid-lowering management. The 2019 ESC/EAS guidelines recommend LDL-C <1.4 mmol/L with at least 50% reduction from baseline, while non-HDL-C <2.2 mmol/L is an additional target. The 2021 ESC prevention guidelines and 2025 focused update further emphasize structured treatment intensification when goals are not achieved with statins alone (Mach et al., 2025). However, real-world target achievement after AMI remains suboptimal. Clinical pharmacists may address this implementation gap through medication review, adherence assessment, lipid monitoring, patient education and guideline-based recommendations, improving LDL-C control and guideline implementation (Flo et al., 2025; AlAhmad et al., 2023). Therefore, this study assessed lipid target attainment and actionable pharmacist-supported intervention points in secondary cardiovascular prevention.

Materials and methods

This observational, retrospective, single-centre study was conducted using medical records of adult patients treated at the University Clinic for Cardiology in Skopje, with documented AMI within the previous three years and subsequent coronary revascularization. All patients were managed with statin-based lipid-lowering therapy as part of secondary cardiovascular prevention. Demographic data and available lipid parameters were extracted from medical documentation. Lipid values, including total cholesterol, LDL-C, HDL-C and triglycerides, were assessed at least six months after the acute event. Non-HDL-C was calculated as total cholesterol minus HDL-C when both values were available. The primary outcome was achievement of the ESC/EAS-recommended LDL-C target of <1.4 mmol/L, while the secondary outcome was

achievement of non-HDL-C <2.2 mmol/L. Descriptive statistics were used. Missing lipid values were not imputed; analyses were performed only in patients with available laboratory data.

Results and discussion

A total of 86 patients were included. The cohort was predominantly male, with 57 men and 29 women, corresponding to 66.3% and 33.7%, respectively. Age data were available for 81 patients; the mean age was 63.9 ± 11.6 years, reflecting a clinically relevant population with established ASCVD after AMI and coronary revascularization.

Total cholesterol and triglyceride values were available for 84 patients. Mean total cholesterol was 4.34 mmol/L, ranging from 1.94 to 7.80 mmol/L, while mean triglycerides were 1.48 mmol/L, ranging from 0.38 to 5.76 mmol/L. Although these parameters describe the general lipid profile, LDL-C remains the primary therapeutic target in very-high-risk patients, while non-HDL-C provides an additional marker of residual atherogenic lipid burden.

LDL-C values were available for 27 patients, representing 31.4% of the total cohort. Mean LDL-C was 2.10 ± 0.83 mmol/L, with a range from 0.17 to 4.06 mmol/L. The ESC/EAS-recommended LDL-C target of <1.4 mmol/L was achieved in only 4 of 27 patients, corresponding to 14.8% of evaluable patients, while 85.2% remained above target despite having experienced a major cardiovascular event.

HDL-C values were available for 23 patients, allowing calculation of non-HDL-C. Mean non-HDL-C was 2.61 ± 1.01 mmol/L, ranging from 0.92 to 4.60 mmol/L. The recommended non-HDL-C target of <2.2 mmol/L was achieved in 8 of 23 patients, corresponding to 34.8%.

These findings are clinically important because post-AMI patients are classified as very high risk and require intensive lipid-lowering management. Failure to achieve LDL-C <1.4 mmol/L may indicate the need for structured reassessment of therapy, including adherence evaluation, confirmation of adequate statin intensity and consideration of combination lipid-lowering therapy.

The incomplete availability of full lipid profiles is also relevant. LDL-C was documented in only approximately one-third of the cohort, while complete data allowing non-HDL-C calculation were available in an even smaller subgroup. This represents not only a methodological limitation, but also a potential quality-of-care gap in post-AMI follow-up. From a clinical pharmacy perspective, these results define actionable intervention points, including identification of patients without recent lipid testing, systematic LDL-C and non-HDL-C follow-up, adherence and tolerability assessment, review of drug-related problems and referral for therapeutic intensification when guideline targets are not achieved.

Conclusion

In this real-world cohort of very-high-risk patients after AMI and coronary revascularization, achievement of guideline-recommended lipid targets was substantially inadequate, with only 14.8% reaching the ESC/EAS LDL-C goal and 34.8% achieving the non-HDL-C target. Incomplete lipid documentation further suggests a relevant monitoring gap in post-event care. These findings highlight the need for structured multidisciplinary lipid-management pathways, in which clinical pharmacists may support secondary prevention through medication review, adherence assessment, lipid follow-up and timely referral for therapeutic optimization.

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