



**Aggressive lipid-lowering treatment in Managed Care after Acute Myocardial
Infarction (MC-AMI) patients — results better but still not sufficient:
A single center prospective analysis**

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Aggressive lipid-lowering treatment in Managed Care after Acute Myocardial Infarction (MC-AMI) patients — results better but still not sufficient: A single center prospective analysis

Short title: Lipid-lowering treatment after myocardial infarction

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INTRODUCTION

Managed Care in Acute Myocardial Infarction (MC-AMI) is a program aimed at comprehensive, scheduled, and supervised care for patients with AMI to improve long-term prognosis [1]. The high risk of cardiovascular complications within the first months after MI is attributable to several factors including incomplete revascularization, insufficient utilization of implantable devices, poor access to cardiac rehabilitation, and inadequate control of cardiovascular risk factors due to lack of scheduled outpatient cardiology care [2, 3]. Despite ESC recommendations for secondary cardiovascular disease prevention, the real-world data show that there is still much to do with regard to post-MI care and the coordination of all the key elements of post-MI care [4, 5]. The novelty of MC-AMI is the approach to execute all the

guideline-recommended therapeutic interventions, which are normally available within the healthcare system, but hardly followed accurately.

It has already been proved that participation in MC-AMI improves short-term [6] and long-term prognosis [7–9]. However, the contribution of particular MC-AMI components in a final effect is still being evaluated.

The reduction of low-density lipoprotein cholesterol (LDL-C) is a crucial intervention in both primary and secondary prevention of cardiovascular events [10]. 2021 ESC Guidelines recommend a stepwise approach in patients with established atherosclerotic cardiovascular disease with LDL-C goals <70 mg/dl in the first and <55 mg/dl in the second step [11].

This prospective study aimed to assess the effect of scheduled, 2-step, aggressive lipid-lowering therapy in patients after myocardial infarction participating in MC-AMI.

METHODS

This is a prospective analysis from a single, high-volume, tertiary cardiology care center (Upper Silesian Medical Center, Medical University of Silesia in Katowice, Poland).

A study group consisted of 160 consecutive subjects diagnosed with AMI from January to June 2023 who consented to participate in MC-AMI and were qualified for ambulatory cardiac rehabilitation in our center. A detailed description of the MC-AMI program is available in our previous reports [6–9].

Lipid profile, including total cholesterol, LDL-C, high-density lipoprotein cholesterol, and triglycerides were assessed during MI hospitalization. In all patients high-intensity statin (atorvastatin 40–80 mg, rosuvastatin 20–40 mg) was introduced at index hospitalization unless contraindicated or LDL goal already reached. During the 6-week CR programme patients additionally received dietary and lifestyle modification counseling. The lipid profiles were reassessed at 6 and 12 weeks with respective interventions (continuation, intensification, or de-escalation of therapy).

The study protocol was approved by the Ethics Committee of the Medical University of Silesia in Katowice.

Statistical analysis

Statistical analysis was performed with Statistica (StatSoft, Poland). Quantitative variables were specified as the median and interquartile range, whereas qualitative parameters were expressed as numbers and percentages. We used Shapiro–Wilk’s test to check if continuous variables followed a normal distribution. Friedman test along with Nemenyi *post-hoc* test were

used to compare dependent variables of non-normal distribution. Cochran's Q test was used for testing differences between frequencies.

A *P* value of less than 0.05 was regarded as statistically significant.

RESULTS AND DISCUSSION

The baseline characteristics of the studied groups are shown in [Figure 1](#).

Patients were treated with atorvastatin (*n* = 85; 53%) and rosuvastatin (*n* = 75; 47%). High-intensity statin was introduced at the baseline in 89% of patients and 32 patients (20%) received ezetimibe at index hospitalization.

Median baseline LDL-C was 102 mg/dl (68–135 mg/dl). It was reduced to 55 mg/dl (41–80 mg/dl) after 6 weeks and remained at 54 mg/dl (41–62 mg/dl) at 12 weeks (*P* <0.001). At 6 weeks the statin therapy was intensified in 32% of subjects, continued in 61%, and deescalated in 7%. Ezetimibe was introduced in a further 30 patients (38.8% of all subjects starting week 6).

At 12 weeks almost 70% of subjects reached the LDL-C <55 mg/dl goal with only 2 patients (1.3%) not reaching the LDL-C goal <100 mg/dl. In 87% the therapy was continued, in 4% — further intensification was required, and in 9% the treatment was de-escalated ([Figure 1](#)).

High-density lipoprotein cholesterol remained similar over observation time. Triglyceride levels improved from 117 mg/dl (88.5–165.5 mg/dl) baseline to 93 mg/dl (82–120 mg/dl) at 12 weeks, *P* <0.001.

The results in this prospective study show much better LDL-C control in post AMI patients when the intervention and the goals are clearly defined, and the emphasis is put on executing the recommendations. Surprisingly, despite similar baseline LDL-C levels and similar characteristics of the study group, the effects of reaching LDL-C goals in this prospective study were much better than in the recent MC-AMI multicenter retrospective analysis, where only 20% of subjects attained LDL-C <55 mg/dl goal [12]. Similar data come from the POLASPIRE study [13] and the DA VINCI study [14]. Although the study was performed in a selected population of AMI patients (higher proportion of more motivated patients willing to participate in ambulatory CR programme), our results show that better LDL-C control in secondary prevention is feasible. On the other hand the results point out, that despite all the efforts made, with the use of available treatment options there is still 30% of patients who do not reach the LDL-C goal. This fact highlights the need for broader availability and applicability of PCSK9 inhibitors in secondary prevention which currently is available only if LDL-C remains >100 mg/dl. In our cohort, this would only apply to 1.3% of patients leaving 29% without further

options.

Article information

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Baseline characteristics

Age (years) median (Q1-Q3)	65.5 (57-71)
Sex (Female) n (%)	39 (24.4%)
History of CHD n (%)	67 (41.9%)
Hypertension n (%)	121 (75.6%)
Diabetes n (%)	39 (24.4%)
Hiperlipidaemia n (%)	79 (49.4%)
CKD (GFR<60ml/min/1.73) n (%)	8 (5%)
GFR (ml/min/1.73) median (Q1-Q3)	86 (71-95)
Current smoker n (%)	69 (43.1%)
History of MI n (%)	50 (31.3%)
History of PCI n (%)	49 (30.6%)
History of CABG n (%)	13 (8.1%)
LVEF (%) median (Q1-Q3)	50 (40-55)

Attainment of LDL treatment goals after 6 and 12 weeks

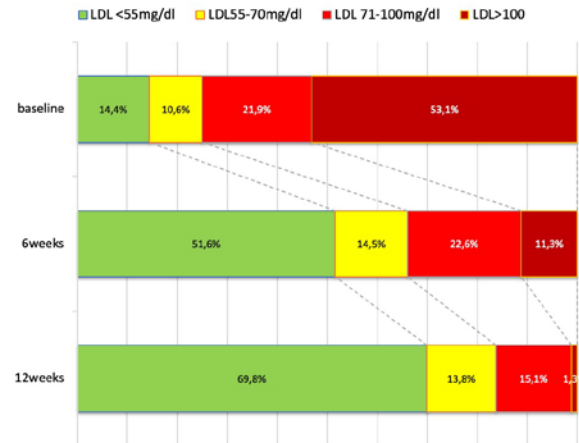


Figure 1. Baseline characteristics and attainment of LDL-C goals in 12-week observation. Baseline characteristics (left panel) and attainment of LDL-C goals at 6 and 12 weeks after myocardial infarction (right panel)

Values expressed as median (Q1–Q3) or n (%)

Abbreviations: CABG, coronary artery bypass grafting; CAD, coronary artery disease; CHD, coronary heart disease; CKD, chronic kidney disease; LDL, low-density lipoprotein cholesterol; LVEF, left ventricular ejection fraction; MI, myocardial infarction, PCI, percutaneous coronary intervention