

## STUDY OF OUTCOME OF STATIN THERAPY IN PATIENTS BY CHECKING LIPID PROFILE AFTER 3 MONTHS OF STARTING TREATMENT IN STATIN NAIVE PATIENTS

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### Abstract

**Background:** To describe the outcome of statin therapy in patients by checking lipid profile after 3 months of starting treatment in statin naive patients

**Methods:** Study was conducted on Patients with indications for statins presenting to cardiology OPD, Medicine OPD and Endocrinology OPD and started on statins at PGIMER, Chandigarh, within a period of 9 months.

**Results:** The mean decrease in total cholesterol, triglycerides, VLDL and LDL levels in primary prevention group mean decrease in after 3 months of statin treatment in comparison to baseline were 17.24%, 21.24%, 22.83% and 33.19% respectively and increase in mean HDL level was 9.55%. The mean decrease in total cholesterol, triglyceride, VLDL and LDL levels in secondary prevention group after 3 months of statin treatment in comparison to baseline were 14.35%, 15.80%, 16.17% and 36.92% respectively and increase in mean HDL level was 8.77%.

**Concluded:** So there was statistically significant change in lipid profile from baseline in both primary and secondary prevention groups after 3 months of statin treatment.

**Keywords:** Statin, LDL, VLDL, HDL

### Introduction

American College of Cardiology/American Heart Association (ACC/AHA) Guidelines 2013 recommended high dose of statin therapy for patients ( $\geq 21$  years of age) having any form of CVD or serum low density lipoprotein-cholesterol (LDL-C)  $\geq 190$  mg/dL. Moderate or high doses of statin therapy is suggested for patients with diabetes (age 40–75 years, and serum LDL-C levels of 70–189 mg/dL), having a predicted 10-year atherosclerotic cardiovascular disease risk of  $\geq 7.5\%$ , without any evidence of CVD. The ASCVD events reduce significantly with both moderate and high intensity statin therapy, but low compliance may be a factor which can negate this outcome.<sup>1-2</sup>

Compliance is defined as the extent to which a person's behavior coincides with medical or health advice. A meta-analysis of more than 90,000 patients demonstrated that statins are the most effective lipid-modifying agents with a 17–26% reduction in risk of coronary events. The benefit of statin therapy on the desired clinical outcomes may be lost when patients are poorly compliant to therapy as only 30–40% of patients who are being treated with statins continue medication after one year. This aspect needs to be explored whether patients despite having less compliance continue to get the benefits of statins in terms of reduction in serum levels of total cholesterol (TC), low density lipoprotein-cholesterol (LDL-C), triglycerides (TG), non-HDL-C and increase in high density lipoprotein-cholesterol (HDL-C) level or not.<sup>3-4</sup>

### Material and methods

#### Study area:

Patients with indications for statins presenting to cardiology OPD, Medicine OPD and Endocrinology OPD and started on statins at PGIMER, Chandigarh, within a period of 9 months.

#### Time period:

The study was conducted for 6 months in Cardiology OPD, Medicine OPD Endocrinology OPD and follow up was done for 3 months (from December 2018 to August 2019).

#### Type of study:

Descriptive cross-sectional for both primary and secondary objectives.

#### Study population:

Patients with indications for statins being prescribed statins at Cardiology, Medicine and Endocrinology OPD PGIMER, Chandigarh

#### Study subjects and sample size:

320 patients of both sexes and all ages with indications for statins being prescribed statins during the study period were chosen as cases.

Clinical records of all cases were reviewed for indications of statins and lipid profile was be done at baseline and after

3 months in all the subjects to study the response to statin therapy.

#### Inclusion criteria:

1. Patients with indications of statins for primary prevention according to AHA 2018 guidelines who are not on statins or have been receiving statins for not more than one month.
2. Patients receiving statins for secondary prevention of ASCVD, who are not on statins or have been receiving statins for not more than one month.

1. Patients with contraindications to statins (deranged LFTs: AST/ALT more than 5 times ULN).
2. Patients with ESRD /renal failure.
3. Patients who didn't give consent.
4. Patients lost to follow up.
5. Patients having mortality during the study period.
6. Patients who are already on statins for more than 1 month.

#### Results

The mean decrease in total cholesterol, triglycerides, VLDL and LDL levels in primary prevention group mean decrease in after 3 months of statin treatment in comparison to baseline were 17.24%, 21.24%, 22.83% and 33.19% respectively and increase in mean HDL level was 9.55%.

#### Exclusion criteria:

**Table 1: Lipid profile at baseline and after 3 months of statin therapy in primary prevention group**

Lipid profile	Primary prevention group (Mean ± Standard Deviation)		Mean difference	p-value
	Baseline 3 Months			
TCL(mg/dl)	214.92±51.87	177.86±47.93	-17.24%	.0001**
TGL(mg/dl)	220.93±123.96	172.34±86.52	-21.99%	.0001**
LDL(mg/dl)	142.17±43.22	94.98±38.33	-33.19%	.0001**
VLDL(mg/dl)	44.62±25.50	34.43±17.04	-22.83%	.0001**
HDL(mg/dl)	42.69±9.41	46.77±7.05	9.55%	.0001**

Data are presented as mean (95% confidence interval). Abbreviations: TCL, total cholesterol; LDL, low density lipoprotein; VLDL, very low density lipoprotein; HDL, high density lipoprotein.

The mean decrease in total cholesterol, triglyceride, VLDL and LDL levels in secondary prevention group after 3 months of statin treatment in comparison to baseline were 14.35%, 15.80%, 16.17% and 36.92% respectively and increase in mean HDL level was 8.77%.

So there was statistically significant change in lipid profile from baseline in both primary and secondary prevention groups after 3 months of statin treatment.

**Table 2: Lipid profile at baseline and after 3 months of statin therapy in secondary prevention group**

Lipid Profile	Secondary prevention group (Mean ± Standard deviation)		Mean difference	p-value
	Baseline 3 Months			
TCL(mg/dl)	179.31±49.90	153.57±44.74	-14.35%	.0001**
TGL(mg/dl)	174.25±61.79	146.73±46.44	-15.80%	.0001**
LDL(mg/dl)	112.41±35.45	70.90±29.64	-36.92%	.0001**
VLDL(mg/dl)	35.01±12.40	29.35±9.63	-16.17%	.0001**
HDL(mg/dl)	44.20±8.40	48.08±8.25	8.77%	.0001**

Data are presented as mean (95% confidence interval). Abbreviations: TCL, total cholesterol; LDL, low density lipoprotein; VLDL, very low density lipoprotein; HDL, high density lipoprotein.

#### Discussion

In primary prevention group out of 91 prescriptions, the mean decrease in total cholesterol, triglycerides, LDL at the end of three months was 21%, 25.4%, 41.4% respectively and mean increase in HDL was 10.4%. In the primary prevention group receiving statins as per guidelines (91 patients), 93.7% in high risk group had LDL reduction more than 50% and 71% in moderate risk

group achieved LDL reduction between 30-50% and 100% in low risk group achieved LDL reduction upto 30%. In the secondary prevention group, out of 108 prescriptions, the mean decrease in total cholesterol, triglyceride, VLDL and LDL levels after 3 months of statin treatment in comparison to baseline was 14.35%, 15.80%, 16.17% and 36.92% respectively and increase in mean HDL level was 8.77%. 34/108 patients (31.48%) actually achieved more than 50% LDL reduction at the end of three months.

**Conclusion**

So there was statistically significant change in lipid profile from baseline in both primary and secondary prevention groups after 3 months of statin treatment.

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