

Introduction

This study examines how frequently lipid profiles should be monitored in adults with type 2 diabetes mellitus (T2DM) without cardiovascular disease (CVD) at different LDL cholesterol (LDL-C) levels.

Methods

Study design: Target trial emulation study

Participants: Adult T2DM patients without CVD from Jan 1, 2009, to Dec 31, 2012. Patients were classified into 4 groups based on their LDL-C levels (<1.8, 1.8-2.59, and ≥2.6 mmol/L).

Treatment strategies: Various lipid profile monitoring intervals (2-8, 9-15, and 16-24 months).

Outcomes: All-cause mortality, major cardiovascular diseases (CVD) including myocardial infarction, stroke, and congestive heart failure.

Statistical analysis:

Cloning: Replicate individuals and assign them to each strategy.

Censoring and weighting: Censor replicates artificially when they deviate from the assigned strategy and weight uncensored individuals using time-varying inverse-probability of treatment weighting (IPTW) estimated based on both baseline and post-baseline covariates. These covariates included demographic information, morbidities, concomitant treatments received, and laboratory parameters.

Estimating treatment effects: Pooled logistic model adjusted for subjects' baseline characteristics.

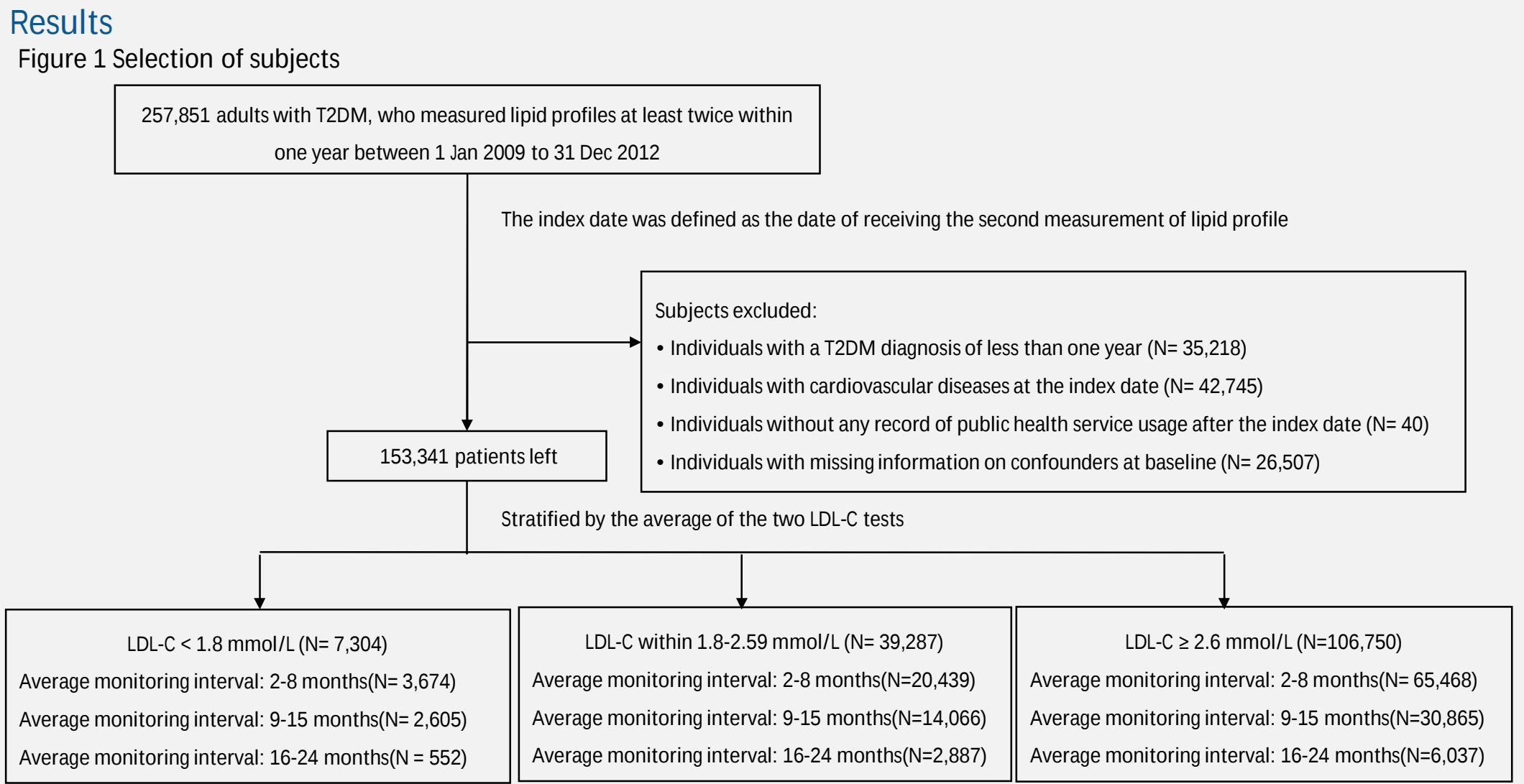


Table 1: Risk of Outcome for Varying Monitoring Intervals in Patients

➤ A total of 153,341 patients were identified.

➤ For those with LDL-C <1.8 mmol/L, extending the lipid profile monitoring interval to every 16-24 months did not increase the risk of all-cause mortality or CVD compared to every 2-8 months (HR [95% CI]: all-cause mortality: 1.094 [0.948, 1.263], CVD: 1.002 [0.846, 1.187]).

➤ Patients with LDL-C between 1.8-2.59 mmol/L had significantly higher all-cause mortality risks if their lipid profiles were monitored every 16-24 months rather than 2-8 months (HR [95% CI]: all-cause mortality: 1.154 [1.069, 1.245]).

➤ For patients with LDL-C ≥2.6 mmol/L, monitoring every 9-15 months was associated with increased risks of all-cause mortality and CVD, compared to monitoring every 2-8 months (HR [95% CI]: all-cause mortality: 1.263 [1.174, 1.359], CVD: 1.060 [1.017, 1.105]).

Outcome	LDL-c < 1.8 mmol/L			LDL-c within 1.8-2.59 mmol/L			LDL-c ≥ 2.6 mmol/L		
	2-8 months	9-15 months	16-24 months	2-8 months	9-15 months	16-24 months	2-8 months	9-15 months	16-24 months
All-cause mortality	REF	1.055 (0.932,1.19)	1.094 (0.948,1.26)	REF	1.044 (0.983,1.108)	1.154 (1.069,1.245)	REF	1.263 (1.174,1.359)	1.261 (1.139,1.396)
CVD	REF	0.973 (0.836,1.13)	1.002 (0.846,1.18)	REF	0.961 (0.897,1.029)	1.007 (0.929,1.092)	REF	1.060 (1.017,1.105)	1.067 (1.016,1.120)
MI	REF	1.006 (0.853,1.18)	1.038 (0.863,1.25)	REF	0.988 (0.906,1.077)	1.059 (0.956,1.174)	REF	1.103 (1.041,1.170)	1.086 (1.011,1.167)
Stroke	REF	0.857 (0.642,1.14)	0.935 (0.667,1.31)	REF	0.988 (0.869,1.125)	1.060 (0.901,1.247)	REF	1.055 (0.986,1.130)	1.060 (0.974,1.153)
CHF	REF	0.949 (0.815,1.10)	1.006 (0.849,1.19)	REF	0.955 (0.892,1.023)	0.975 (0.899,1.057)	REF	1.057 (1.014,1.102)	1.073 (1.022,1.127)

REF = Reference group.

Conclusion & Discussion

➤ For individuals with T2DM and LDL-C below 1.8 mmol/L, lipid profile checks may be safely conducted every 16-24 months.

➤ Those with LDL-C levels between 1.8-2.59 mmol/L should undergo monitoring at least every 9-15 months, while patients with LDL-C of 2.6 mmol/L or higher require testing every 2-8 months.