JEMTAC
Journal of Emergency Medicine Trauma & Acute Care
A PEER REVIEWED JOURNAL

OPEN ACCESS

Qatar Health 2022 Conference

Cost-Effectiveness of Non-Statin Lipid-Modifying Agents for Primary and Secondary Prevention of Cardiovascular Disease among Patients with Type 2 diabetes mellitus: A Systematic Review

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ABSTRACT

Background: Non-statin therapies (NSTs) have been shown to provide additional benefits for cardiovascular risk reduction among patients with type 2 diabetes mellitus (T2DM), but their economic merits have not been confirmed. The objective of this systematic review is to evaluate the cost-effectiveness of NSTs for primary and secondary prevention of cardiovascular disease (CVD) in T2DM patients.[1]

Methods: A literature search was systematically performed using MeSH terms (Table 1) from January 1990 to January 2021 in ten databases (e.g. MEDLINE, PubMed, and EconLit). Two reviewers independently screened the included studies that evaluated the cost-effectiveness of NSTs versus any comparator. Quality of Health Economic Studies (QHES) checklist was used for quality assessment.[2] Cost outputs were adapted to 2019 United States dollars (USD) to facilitate comparisons between studies.[3]

Results: The search identified 21,182 records. Of which, 10,781 records were screened based on the title and abstract, and 185 articles based on the full text (Figure 1). After a full-text review, 12 studies were included in this study, where eight studies evaluated ezetimibe, four evaluated Proprotein Convertase Subtilisin/Kexin Type 9 (PCSK9) inhibitors, two evaluated fenofibrate, one evaluated nicotinic acid, and one evaluated extended-release niacin/laropiprant (ER-ERN/LRPT). Six out of eight studies considered ezetimibe plus statin to be a cost-effective therapy for patients with T2DM and with or without CVD, three out of four studies suggested that PCSK9 inhibitors were not cost-effective. Fenofibrate, nicotinic acid, and ER- ERN/LRPT were cost-effective. Based on QHES, the majority of economic evaluations had good quality of reporting. The ICERs were consistent in the majority of studies after adaptation to 2019 USD values.[1–3]

Conclusion: The systematic review demonstrated that most cost-effectiveness studies considered NSTs to be cost-effective compared with standard care but not PCSK9 inhibitors for primary and secondary prevention of CVD in T2DM patients.

Keywords: Non-statin, Diabetes, Cardiovascular disease, Cost-effectiveness, Standard care

http://dx.doi.org/10.5339/jemtac.2022.qhc.38

Submitted: 27 July 2021
Accepted: 6 September 2021
Publication date: 15 January 2022

Cite this article as: Abushanab D, Al-Badriyeh D, Marquina C, Bailey C, Jaam M, Liew D, Ademi Z. Cost-Effectiveness of Non-Statin Lipid-Modifying Agents for Primary and Secondary Prevention of Cardiovascular Disease among Patients with Type 2 diabetes mellitus: A Systematic Review, *Journal of Emergency Medicine, Trauma & Acute Care* **2022:38** http://dx.doi.org/10.5339/jemtac.2022.qhc.38

Table 1. MeSH terms used in this systematic review.

- Non-statin lipid modifying agents (pcsk9 inhibitors, proprotein convertase subtilisin/kexin type 9 inhibitors, alirocumab, praluent, evolocumab, repatha, bococizumab, ezetimibe, bile acid sequestrants, cholestyramine, colestipol, colesevelam, niacin, nicotinic acid, fibrates, fenofibrate, gemfibrozil, clofibrate, n-3 polyunsaturated fatty acids, n-3 PUFA, bempedoic acid, lomitapide, or mipomersen).
- Cardiovascular outcome (cardiovascular disease, cardiovascular condition, cardiovascular morbidity, cardiovascular events, cardiovascular death, myocardial infarction, unstable angina, revascularization, heart failure, stroke, or cerebrovascular event).
- Cost-effectiveness (cost-effectiveness, cost-effective, cost-benefit, cost-utility, economic, pharmacoeconomic, cost avoidance, or cost).
- Type 2 diabetes (type 2 diabetes, diabetes type 2, or diabetes).

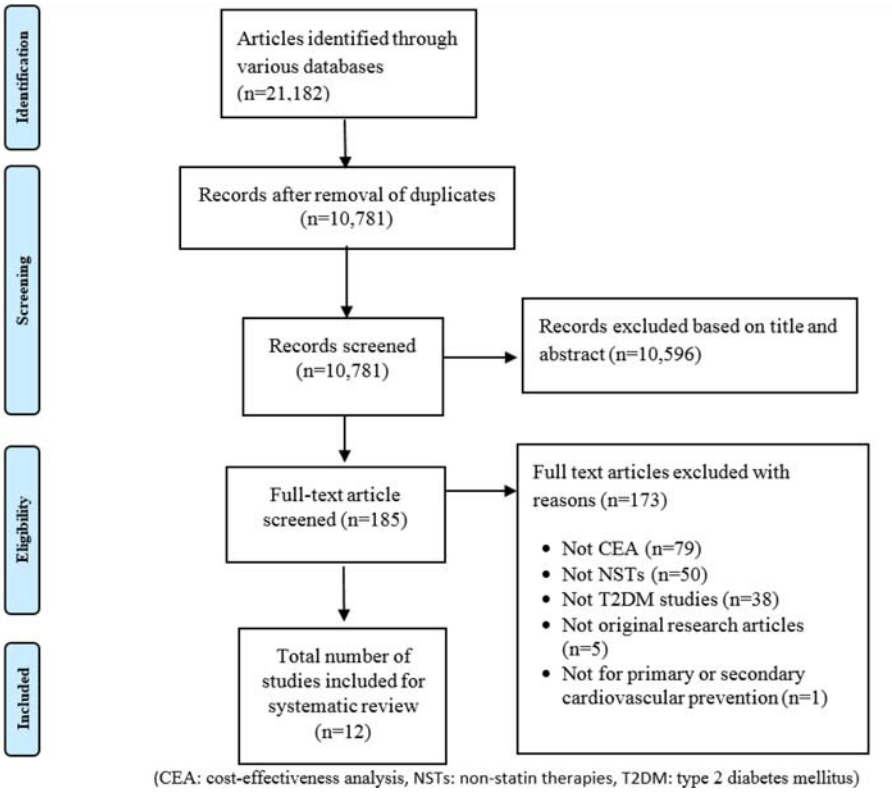

Figure 1. PRISMA flow diagram showing the selection process of the included articles.

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