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The Efficacy and Safety of Statins in the Primary Prevention of Cardiovascular Disease

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Abstract
Atherosclerotic plaques form in the blood vessels from particles of cholesterol. These plaques are a major cause of cardiovascular disease and have the ability to result in fatal cardiovascular events. In researching this topic, Published, the Cochrane Library, DynaMed, and ClinicalKey were all utilized in finding and analyzing from 2002 to 2018. There are several organizations with conflicting guidelines recommending the use of statin medications in the primary prevention of cardiovascular disease. The research evaluated discovers data is inconclusive on the benefit of statin medications in this primary prevention as well as the safety of long-term statin use. Some experts have suggested prescribing statins commonly prescribed medications in the United States. Statin medications continue to be extremely beneficial in the secondary prevention of cardiovascular events, but caution should be applied by providers when prescribing this medication to their patients for primary prevention when referral to conflicting population based guidelines. Providers should identify key risk factors and have conversations with their patients on the risks and benefits of statin medications when they are being utilized for the primary prevention of cardiovascular disease.

Introduction
Atherosclerotic plaques form in the blood vessels from particles of cholesterol. These plaques are a major cause of cardiovascular disease (CVD) and have the ability to result in fatal cardiovascular events (Baron, 2017).

Data is incomplete and differ among many studies whether the use of statins is beneficial in primary prevention when evaluating the rate of CVD events, CVD mortality and all-cause mortality.

HMG-CoA reductase is an enzyme involved in the first step in the formation of cholesterol in the liver. By inhibiting HMG-CoA (the mechanism of statin medications), the synthesis of cholesterol is reduced, thereby reducing the need for the liver to produce cholesterol. As a result, we still do not know the exact cause of plaque formation or migration of plaques resulting in cardiovascular events. There is also a lack of information on whether statin medications have deleterious long-term effects as the widespread use of statins has been somewhat recent in terms of medical research as statins were first approved for use in 1987 (Baron, 2017).

Statin Mechanism of Action

Recommnendation Guidelines

Applicability to Clinical Practice

References

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Literature Review

In patients without existing cardiovascular disease, does taking a statin medication (rather than not taking a statin medication) prevent cardiovascular disease?

Recommendation Guidelines

- With 1 Risk Factor (diabetes, diabete, hypertension, smoker)
- Age 40–74 years
- LDL > 100 mg/dL and Age ≥21 (grade B)
- Diabetes, Age 40–75 and LDL 100–189 mg/dL (grade A)
- No Diabetes, Age 40–75, LDL 70–189 mg/dL, and ASCVD Risk >7.5% (grade A)
- No Diabetes, Age 40–75, LDL 70–189 mg/dL, and ASCVD Risk 5%+ (grade B)

- Based on Long-term Use

- No Diabetes, Age 40–75, LDL 100–189 mg/dL
- Diabetes, Age 40–75 and LDL 100–189 mg/dL

- With greatest benefit seen in patients with multiple risk factors, patients with single risk factors may have the greatest effect in the risk versus benefit decision making when determining statin appropriateness in patients care.

- Removal of statin therapy based on recommendations vs the ACC/AHA guidelines.

- Application to Clinical Practice

- Providers can use this information to make decisions together with their patients on whether a statin prescription is appropriate.

- Long-term use of statins is questionable. Most of these medications, however, have yet to be evaluated and also is a consideration providers should take into account when discussing risks with their patients.

- As patients get older, compliance with conditions such as diabetes at much younger ages, long-term use of statins will become more prevalent.

- Side effects should be frequently discussed and risks should be assessed looking at the ACC/AHA guidelines.

- Providers must assess each patient’s benefits versus risks to determine if a statin prescription may have an effect on the primary prevention of CVD.

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