



Statin Use in Atlantic Canada

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Background:

High levels of low-density lipoprotein (LDL) cholesterol represent a significant risk factor for cardiovascular disease (CVD) [1]. Thus, decreasing LDL cholesterol levels is a key factor in reducing CVD mortality [2]. The drug class statins has proven to be a very effective therapy for reducing LDL-cholesterol levels. Statins also have been shown to reduce inflammation, which plays a prominent role in the development of CVD [2-4]. Based on these therapeutic effects Canadian guidelines now recommend that 1 in 4 Canadians take statins to reduce high LDL cholesterol to reduce the risk of adverse cardiovascular (CV) outcomes [2, 5]. However, a recent report suggests that only 1 in 10 Canadians are taking statin drugs [6]. Therefore, the aim of this brief report was to identify the number of Atlantic Canadians with CVD risk factors taking statins and compare this to the Canadian guidelines and the national average for statin usage.

Methods:

The incidence of statin use was estimated using data from the Atlantic Partnership for Tomorrow's Health (PATH) cohort. Recruitment and data collection have been previously described [7]. Atlantic PATH has recruited over 31000 participants and of those, 4315 participants reported using statins. The estimate of statin use among Atlantic Canadians was calculated from collected questionnaires in which participants were asked to report prescribed medications that they were currently taking. The questionnaires also captured self-reported data on cardiovascular risk factors such as being diagnosed with high blood pressure, myocardial infarction (MI), stroke and diabetes. Data are presented by sex as the number and percentage of participants taking statins in a particular age group or who reported being diagnosed with a CVD risk factor. Data analyses were performed with SPSS (version 22) and statistical significance differences between male and female participants were determined by independent t-test ($P < 0.05$).

Results:

Overall, 14% of participants in the Atlantic PATH cohort reported currently taking statins. Of these participants 21% were males and 11% were females. In both sexes, people aged 60-69 years reported the highest percent of individuals taking statins. Only 29% of participants (36% of

men and 24% of women) who reported having been diagnosed with high blood pressure were currently taking statins. In contrast, 66% of total participants (70% of men and 60% of women) who had a MI reported currently taking statins. Of the participants that reported having a stroke, 41% of total participants (51% of men and 36% of females) reported taking statins. Statin use was reported in 46% of participants (57% of males and 40% of females) with diabetes.

Table: Statin Users Across Age and In Participants with CV Risk Factors

		n (%)		
		Total	Male	Female
Overall Total		4315 (13.84)	1958 (20.73)	2357 (10.85)*
Age Group	35-39	34 (1.10)	18 (2.22)	16 (0.70)*
	40-49	379 (4.57)	171 (7.44)	208 (3.47)*
	50-59	1563 (14.11)	681 (21.44)	882 (11.16)*
	60-69	2339 (26.86)	1088 (34.42)	1251 (22.56)*
CV Risk Factors				
	High BP	2239 (28.50)	1037 (36.25)	1202 (24.06)*
	MI	358 (66.30)	246 (69.69)	112 (59.89)*
	Stroke	130 (41.27)	56 (51.38)	74 (35.92)
	Diabetes	1068 (45.56)	460 (56.86)	608 (39.61)*

* Significant difference from male participants (P<0.01).

Discussion:

While the majority of Atlantic PATH participants that reported having had a MI reported taking statins, overall this study showed that only 1 in 7 PATH participants reported currently taking statins. While somewhat better than the national average of 1 in 10 [6], this level of prescription is markedly lower than the recommended Canadian guidelines of 1 in 4 [5]. Interestingly, statin use in Atlantic PATH males (1 in 5) was more similar to the recommended guidelines, whereas usage in female Atlantic PATH participants (1 in 9) more closely resembled the national average (1 in 10) [5]. The low use of statins in Atlantic Canada is especially concerning since the Atlantic region has the highest incidence of CVD in Canada [8]. Thus, based on the ability of statins to reduce adverse CV events (e.g. MI, heart failure, stroke and coronary heart disease) and improve survival as a result of decreased CV mortality [5], it would be expected that this class of drugs would be more widely used within the region.

The Cholesterol Treatment Trialists' Collaboration [5] demonstrated that statin therapy reduced the incidence of stroke in both men and women. Despite this information, more than 50% of

Atlantic PATH participants that experienced a stroke do not take statins. Furthermore, recent evidence suggests that statin therapy may also decrease systolic blood pressure [4], the primary risk factor for stroke. However, in the current Atlantic PATH cohort, the majority of participants (72%) with high BP do not take statins. Thus, greater use of statins may represent a novel therapeutic approach that could be useful to lower blood pressure and decrease the risk of stroke in Atlantic Canada.

In contrast to the benefits associated with statin use, there is also a concern that the regular use of statin therapy could increase the risk of developing diabetes [9]. Data from a meta-analysis examining 13 trials of non-diabetic patients showed that after a mean follow-up of 4 years, statin therapy was associated with an increased incidence of diabetes [9]. As diabetes is a risk factor for CVD, there is the potential that statins could increase CVD risk in some cases rather than reduce it. Therefore, the overall risk of CVD and diabetes risk as well dosage and monitoring strategy need to be considered when prescribing statin therapy.

In summary, the use of statins in Atlantic PATH participants does not meet the recommended guidelines to reduce the risk of CVD morbidity and/or mortality. Thus, an increase in the use of statins could help to combat the high levels of CVD that are present in Atlantic Canada. However, caution must be exercised when prescribing statins as there are risks (e.g. diabetes) associated with their use.

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