Examining the gap between evidence based guidelines and clinical practice in lipid modification in adults at high risk of cardiovascular disease mortality: evidence from an Irish cohort

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Introduction

The role of statins in the secondary prevention of cardiovascular disease (CVD) is well established [1]. Statin therapy is also recommended as part of the management strategy for diabetics [2].

In asymptomatic individuals, statins are recommended if their Systematic Coronary Risk Estimation (SCORE) of 10 year CVD mortality is high (≥5% and ≤10%) or very high (≥10%) and Low-Density Lipoprotein (LDL-C) levels are above defined intervention thresholds [2].

Aim and Objectives

To examine the extent to which clinical practice in statin prescribing adheres to clinical guidelines in those with

- Existing cardiovascular disease (CVD)
- Diabetes mellitus (DM) without CVD
- High or very high SCORE risk

Method

- Cross-sectional study
- Irish Longitudinal Study on Ageing (Wave1)
- Home based interview and health assessment
- Data collection 2009-2011
- Representative sample of community living older adults in Ireland aged 50 years and older
- Analysis limited to those aged 50-64 years
- Self-report of CVD (angina, myocardial infarction, bypass surgery, angioplasty or stent, stroke or transient ischaemic attack) and diabetes based on ever having a doctor's diagnosis
- CVD risk in those without CVD or diabetes was calculated using the SCORE 'low' risk country equations

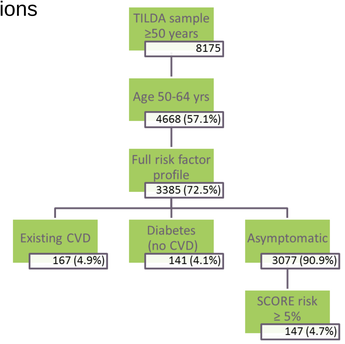

Figure 1: Flow chart of the N of participants included in analysis

Results

The response rate to the TILDA survey as a whole was 62%. In those aged 50-64 years the mean age was 56.7 years and 45% were male (Table 1).

Table 1: Characteristics of the sample 50-64 years (n=3385)

	Males Mean (SD)	Females Mean (SD)	Total Mean (SD)
Age	56.6 (4.2)	56.7 (4.2)	56.7 (4.2)
Sex %	45	55	100
Current smoker %	18.5	18.5	18.5
Total Cholesterol	5.0 (1.0)	5.4 (1.0)	5.3 (SD 1.0)
LDL C (mmol/L)	2.9 (0.9)	3.16 (0.9)	3.0 (SD 0.9)
HDL C (mmol/L)	1.3 (0.3)	1.7 (0.4)	1.5 (SD 0.4)
Systolic BP (mmHg)	137.1 (17.2)	127.6 (17.9)	131.9 (SD 18.3)
Diastolic BP (mmHg)	85.3 (10.7)	81.4 (11.0)	83.2 (SD 11.0)

Almost 5% (n=167) had established CVD and 4.1% (n=141) had diabetes without CVD (Figure 1).

SCORE risk was estimated in those without established CVD or diabetes (n=3077), 40.8% were at low risk, 54.3% at moderate risk, 4.1% at high risk and 0.6% at very high risk of 10 year CVD mortality. In total almost 5% (n=147) were classified at high or very high risk for CVD mortality; this was higher in males compared to females (9.6% vs 1.0%) (Figure 2).

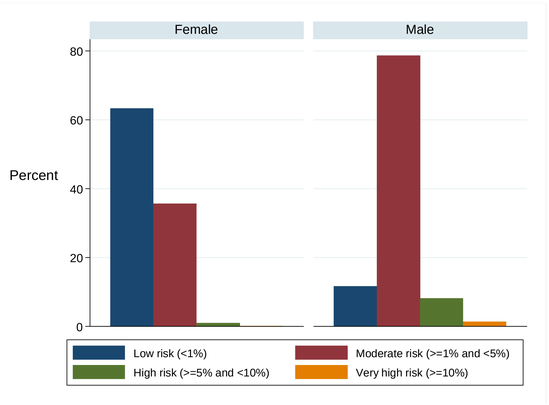

Figure 2: SCORE 10 year risk of CVD mortality by sex in those without CVD or Diabetes

In those whose SCORE risk was high 85% were found to have LDL-C levels ≥2.5mmol/L which is the threshold for immediate drug intervention. All of those whose SCORE risk was very high had LDL-C levels ≥1.8mmol/L which is the threshold for intervention in this group.

In total 87% of the combined high and very high SCORE risk group met the threshold LDL-C levels for immediate drug intervention (Table 2).

Table 2: LDL-C levels in those with established CVD, diabetes and SCORE risk ≥5%

		LDL-C levels mmol/L					n
		< 1.8 n (%)	1.8 to < 2.5 n (%)	2.5 to < 4.0 n (%)	4.0 to < 4.0 n (%)	>4.9 n (%)	
CVD		46 (27.5)	56 (33.5)	55 (32.9)	5 (3.0)	5 (3.0)	167 (100)
DM (no CVD)		37 (26.2)	38 (26.9)	48 (34.0)	15 (10.6)	3 (2.3)	141 (100)
SCORE	High	6 (4.7)	13 (10.2)	75 (59.0)	22 (17.3)	11 (8.6)	127 (100)
	Very high	0 (0)	2 (10.0)	9 (45.0)	6 (30.0)	3 (15.0)	20 (100)

In those with established CVD 68.8% (95% CI 61.7-75.9%) were taking statins (Figure 3). In diabetics without clinical evidence of CVD only 57.4% (95% CI 49.1-65.7%) are on statins and in those whose SCORE risk was high or very high (≥5%) only 19% (95% CI 12.6-25.4%) were found to be taking statins.

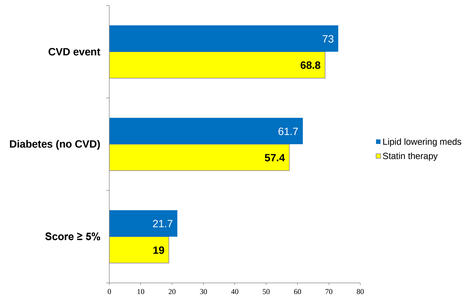

Figure 3: High risk groups by statin and total lipid modification therapy

In those with established CVD, statin therapy ranged from a low of 51.6% in those with a transient ischemic attack to 80.3% in those who had undergone a revascularization procedure (Table 2).

Table 3: Statin use in those with established CVD (50-64 yrs)

CVD event	Statin therapy		
	%	95% CI	n
Transient ischaemic attack	51.6	32.9-70.2	31
Stroke	60.0	39.0-80.6	25
Myocardial Infarction	74.0	64.0-84.0	77
Angina	77.7	67.2-88.3	63
Revascularisation procedure	80.3	69.6-91.0	56
More than one of the above	78.6	68.1-89.2	61

Conclusion

Despite strong evidence and clinical guidelines recommending the use of statins in those with clinical evidence of CVD, a large gap exists between guidelines and clinical practice in Ireland in this cohort, with only 68.8% taking statins. In those with diabetes but no CVD statin utilisation is lower than expected.

It is of concern that such a low proportion of those with a SCORE risk ≥ 5% are taking statins.

Previous research identified patient compliance, lack of time and Government health policy as factors impeding the implementation of CVD prevention guidelines [3]. Further research is required to examine the future health and cost implications of under-treatment in this cohort and to identify health system processes which would facilitate implementation of the guidelines. Barriers to full implementation of the guidelines need to be examined and proactive policies pursued to achieve higher levels of guideline implementation for both primary and secondary CVD prevention.

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Acknowledgements

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Conflict of Interest: None