

Statins in the Elderly – Should we strive to de-prescribe?

Sanqui AJ, Oates G, O'Brien R, Wanniarachchi L., Cam SL
Pharmacy Department, Peninsula Health
asanqui@phcn.vic.gov.au

Introduction

Statins are widely prescribed in the elderly for prevention of cardiovascular disease (CVD). As age increases, strength of evidence supporting statin use for primary prevention in this population diminishes, primarily in those without a history of CVD, type-2 diabetes (T2DM) or vascular disease.

Currently, the absence of a comprehensive assessment tool to guide de-prescribing poses a greater risk of polypharmacy and adverse drug reactions (ADRs) in this vulnerable population. In very elderly patients (age >75 years), age-related factors (functional decline, multimorbidity, frailty, reduced life expectancy), history of statin-associated ADRs and polypharmacy may diminish the potential benefit of statins in primary prevention.^{1,2}

When consequences of statin therapy in this population are considered, statins may potentially cause more harm than good. The result is a possible greater prevalence of inappropriate statin prescribing in this population but also a synchronous opportunity for de-prescribing.

Aim

To develop a statin risk assessment tool tailored for older patients aged over 75 years who may be suitable for statin de-prescribing considering their individual health status, co-morbidities and life expectancy.

Methods

Study Design: Retrospective, single-centre study

Risk-Benefit Assessment Tool for Statin De-prescribing in Very Elderly Patients:

A score-based statin risk assessment tool developed by the principal investigator from current literature utilised to identify the suitability of statin de-prescribing.

Inclusion Criteria:

- 1) Prescribed a statin (atorvastatin, rosuvastatin, simvastatin, or pravastatin)
- 2) Age > 75 years
- 3) Admitted under the Geriatric Evaluation and Management team from a Victorian metropolitan hospital

Exclusion Criteria:

Prescribed a statin for secondary prevention of cardiovascular disease (i.e., documented history of cardiovascular disease/event or cerebrovascular event such as MI and stroke)

1. Cohort extraction

- A report of patients prescribed statins admitted between 01-01-2020 and 01-01-2022 was generated by Health Information Services using International Statistical Classification of Diseases and Related Health Problems (ICD-10) diagnosis codes to identify patients with a diagnosis of dyslipidaemia
- Convenience sampling was used to extract the first 25 patients as per inclusion and exclusion criteria

2. Data collection

- The Cerner™ Electronic Medical Records (EMR) of patients were reviewed to obtain relevant demographic information, clinical data and medication information and documented on a data collection Microsoft® Excel spreadsheet

3. Screening, Assessment & Analysis

- Data was collected and reviewed using the following:
 - The Adapted 'Clinical Frailty Scale (CFS): Classification Tree' to calculate a frailty score (Figure 1)
 - The Charlson Comorbidity Index (CCI) to calculate a score which predicts a 10- year survival rate
 - The 'Risk-Benefit Assessment Tool for Statin De-prescribing in Very Elderly Patients' (Figure 2) to calculate a 'Net Risk-Benefit Score of Statin Therapy' which screens eligible patients to identify suitability for de-prescribing
- Analysis using descriptive statistics via Microsoft Excel

Clinical Frailty Scale (CFS): Classification Tree

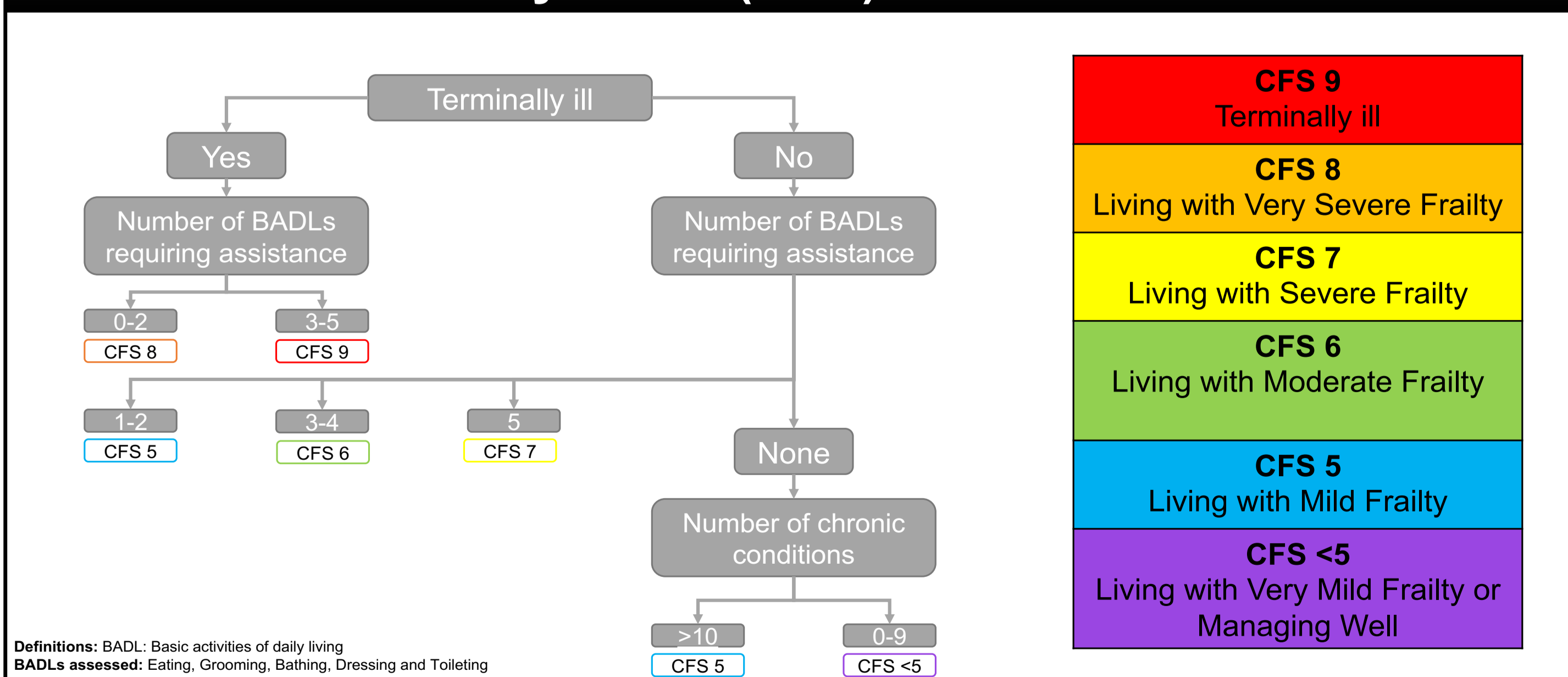


Figure 1. Adapted 'Clinical Frailty Scale (CFS): Classification Tree'

Risk-Benefit Assessment Tool for Statin De-prescribing in Very Elderly Patients

Factors Increasing Appropriateness of Statin	Score	Factors Decreasing Appropriateness of Statin	Score
History of T2DM	5	History of myalgia/rhabdomyolysis/myositis	-2/-3/-5
History of vascular disease	5	History of peripheral neuropathy	-5
Good life expectancy (CCI Score < 5)	3	History of significant ALT/AST elevation	-1
Low-to-moderate frailty (CFS Score < 7)	2	Limited life expectancy (CCI Score ≥ 5)	-3
		Severe frailty (CFS Score ≥ 7)	-2
		Polypharmacy (> 5 regular medications)	-1
		Medication prescribed with significant interaction with statin (as per Micromedex drug interactions checker)	-1 per medication

Greater Supports Continuing Statin (Potentially Appropriate) Greater Supports Deprescribing Statin (Potentially Inappropriate)

Net Risk-Benefit Score of Statin Therapy

Definitions: ALT: alanine aminotransferase, AST: aspartate aminotransferase, CCI: Charlson Comorbidity Index, CFS: Clinical Frailty Score, Myalgia: muscle pain or aching, stiffness, tenderness or cramp associated without an elevation of creatine kinase (CK), Myositis: muscle symptoms associated with CK > 10 x ULN, Rhabdomyolysis: severe muscle damage associated with CK > 40 x ULN, T2DM: Type-2 diabetes mellitus

Figure 2. 'Risk-Benefit Assessment Tool for Statin De-prescribing in Very Elderly Patients'^{2,3}

Results

Table 1. Demographic of study population

	Population (n=25)
	Number of patients (%)
Gender	9 (36%) male 16 (64%) female
Age (median)	82 years
Number of regular medications (median)	9 medications
Charlson Comorbidity Index estimated 10-year survival rate (median)	21%
Type of statin prescribed	7 (28%) atorvastatin 12 (48%) rosuvastatin 5 (20%) simvastatin 1 (4%) pravastatin
Intensity of statin therapy	2 (8%) low 17 (68%) moderate 6 (24%) high
History of type-2 diabetes mellitus (T2DM)	7 (28%)
History of vascular disease	3 (12%)
Co-prescribed a medication with a significant interaction with statin	3 (12%)
Documented history of statin-associated muscle symptoms	2 (8%)
History of peripheral neuropathy	2 (8%)

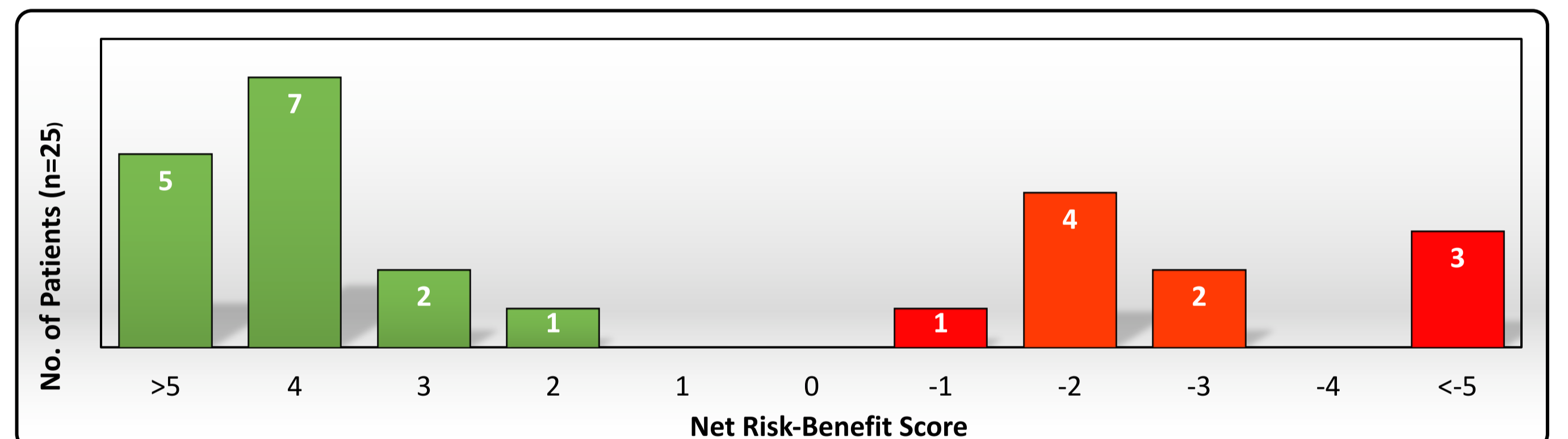


Figure 3. Distribution of 'Net Risk-Benefit Score of Statin Therapy'

Discussion

The 'Risk-Benefit Assessment Tool for Statin De-prescribing in Very Elderly Patients' identified 40% of participants were suitable for statin de-prescribing. This is an important finding and reflective of the consideration of individual patient factors such as frailty and risk factors associated with statin toxicity.¹⁻³

This considered approach is a more holistic and patient focussed way of comprehensively assessing the benefit of statins in older patients.³ Importantly statins are a medication which need to be reviewed at regular intervals and not solely upon initiation. Older patients functional and health status is likely to change more quickly over time.

Limitations

The audit extracted a small sample size of 25 patients which limited the statistical significance of findings. The lack of established guidelines with clear criteria for discontinuation of statins produced difficulty in evaluation of significance of various factors in the assessment of statin appropriateness in the elderly. The accuracy of the CFS score may be limited by inadequate information on medical records (due to retrospective nature of study) and clinical experience of the assessor.

Conclusion

The study demonstrated how utilisation of a medication risk assessment tool may help guide de-prescribing decisions through providing quantitative evaluation of prescribing appropriateness in consideration of individual patient factors. Future research may be to validate and standardise the tool but also apply the methods to other high-risk medications in the geriatric population.

References:

1. Newman CB, Preiss D, Tobert JA, Jacobson TA, Goldstein LB, Chin C, Tannock LR, Miller M, Raghuvver G, Duell PB, Brinton EA, Pollak A, Braun LT, Wely FK. Statin safety and associated adverse events: a scientific statement from the American Heart Association. *Arterioscler Thromb Vasc Biol* [Internet]. 2019 Feb [cited 2022 Mar 25];39:e38–e81. Available from: <https://pubmed.ncbi.nlm.nih.gov/32589572/>; doi: 10.1161/ATV.0000000000000073
2. Grundy SM, Stone NJ, Bailey AL, Beam C, Birtcher KK, Blumenthal RS, Braun LT, de Ferranti S, Faiella-Tommasino J, Forman DE, Goldberg R, Heidenreich PA, Hlatky MA, Jones DW, Lloyd-Jones D, Lopez-Pajares N, Ndumele CE, Orringer CE, Peralta CA, Saseen JJ, Smith SC, Sperling L, Virani SS, Yeboah J. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APHA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol* [Internet]. 2019 Jun [cited 2022 Mar 14]. Available from: <https://www.ahajournals.org/doi/10.1161/19.0000000000000255>; doi: 10.1016/j.jacc.2018.11.003
3. Tenni P, Dunbabi D. A Guide to Deprescribing Statins [Internet]. Launceston: Primary Health Tasmania; 2019 [cited 2022 Mar 26]. 1-4 p. Available from: <https://www.primaryhealthtas.com.au/wp-content/uploads/2018/09/A-Guide-to-Deprescribing-Statins-2019.pdf>