All people over 75 years with a five-year CVD risk of ≥15% should be treated with statins unless specifically contraindicated

NO

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Key points

- Cardiovascular risk estimates for younger people do not work to predict outcomes in the same way for those over 75.
- Statins do not work for primary prevention in people in this age bracket. Including secondary prevention data indicates that they may simply shift the cause of death and morbidity rather than improving the length of life or morbidity.
- There is significant potential harm in indiscriminate prescribing.

Suggesting all over–75-year-olds should be treated with statins is surely a John McEnroe 'You cannot be serious' statement. There are a number of reasons why this idea is nonsense: In this age group, the absolute risk approach doesn't work, the drugs don't work and there is potential for adding to the burden of morbidity rather than relieving it.

Risk in older populations

It is dangerous to infer benefit based on research in younger populations. Risk tables cannot be applied in the same way to older populations and there is good evidence that cardiovascular risk operates differently in older individuals. A study using the Framingham model has demonstrated that in people over 85 years who had not developed cardiovascular disease, the classic risk factors included in a Framingham risk score did not predict those at high risk of cardiovascular mortality in the way it does in younger populations.[1]

Estimates of absolute risk enable assessment of potential benefits of particular treatments in younger populations. However, this approach is not a good model in older age when the likelihood of morbidity due to multiple and compounding diseases is increased. The absolute risk of dying of any one or more of these diseases or in fact something completely different is increased simply because the time of death is proportionately closer. This magnifies the apparent effect of a single intervention for a specific condition, despite overall survival being only minimally affected.

This notwithstanding, preventive treatment might still be justified in terms of postponement of morbidity, even when there is no change in mortality. The use of statins for prevention of cardiovascular disease in the elderly provides a case study for examining these issues further.

Evidence for lipid-lowering agents in older age

So how effective are these drugs in the elderly? There is no evidence that giving statins to all patients ≥15% risk of CVD improves either quantity or quality of life in this age group—i.e. mortality and morbidity are unaffected.

There is only one large randomised controlled trial, carried out in over 5000 70–82-year-olds, that highlights the effect of statins in primary prevention in this age group.

The data in this study revealed *no demonstrable benefit for pravastatin in primary prevention* in this group (Figure 1). A number of studies and analyses have been produced (often sponsored by pharmaceutical companies), obscuring this lack of benefit over 75 by including those 65–75 years in the group of 'older' patients. Further obfusca-

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Figure 1. Effect of statin treatment: primary prevention[2]

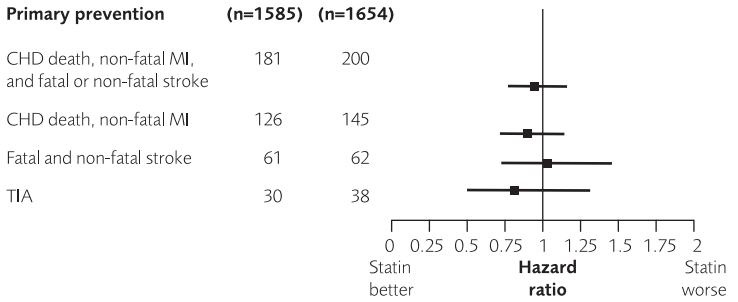


Figure 2. Primary and secondary outcomes in the PROSPER trial.[2]

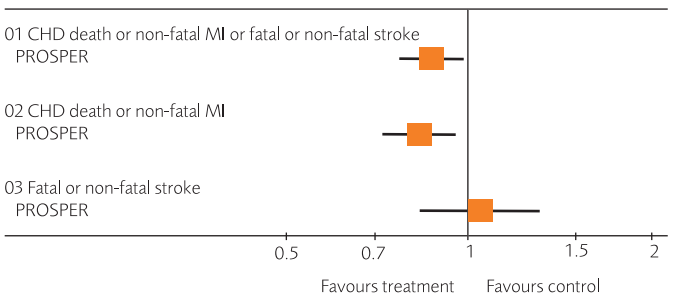
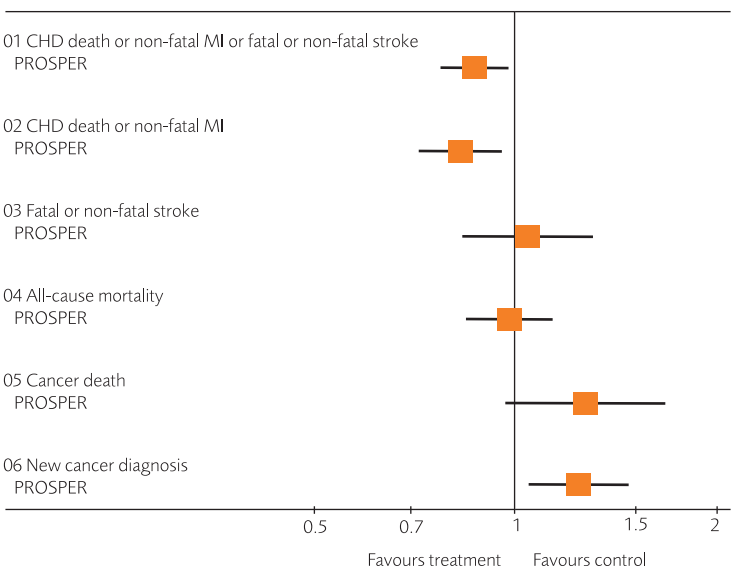


Figure 3. Overall outcomes in the PROSPER trial.[3]



tion occurs by conflating primary and secondary prevention by including patients with established cardiovascular disease.

This paper then combined data for primary and secondary prevention, which showed a modest benefit using the primary composite endpoint of coronary heart disease death or non-fatal myocardial infarction (absolute risk reduction 2.1%, numbers needed to treat 48). This is shown in Figure 2.[2]

This looks more promising in terms of effectiveness. However, it is helpful to consider these data in the context of the patients we see in general practice—overall mortality and morbidity. Despite a change in these cardiovascular composite outcomes, there is no change in all-cause mortality: hazard ratio (HR) 0.97 (95% CI 0.83–1.14). In contrast, rates of cancer diagnosis and death were increased in the treatment group compared with placebo.[2] The HR for cancer death was 1.28 (0.97–1.68) and the HR for cancer diagnosis 1.25 (1.04–1.51), with an absolute risk increase of 1.7% and numbers needed to harm of 59 (Figure 3). So overall there was no change in time to point of death or in morbidity. If the data from morbidity and mortality were combined in the same way as for the CVD outcomes it is likely that this effect would be more marked.

The increase in new cancer diagnoses counters any arguments of compression of morbidity. Preventing one cause of death and morbidity simply reveals another.

The clinical context

If a patient asks a medical practitioner for help with symptoms or disease from which they are suffering, the doctor does the best they can and are not responsible for defects in medical knowledge. There are extra ethical responsibilities around both screening for disease and subsequently giving preventive treatments—whether it is colorectal cancer or measuring cholesterol or blood pressure. If the practitioner initiates procedures and treatments for a disease from which a patient is not suffering they are in a very different situation and a much greater level of certainty is required.

The evidence for statins in this age group does not support this level of certainty. Enthusiastic extrapolation is not enough. The half-life of scientific 'truth' is often short in medicine. The latter point is reinforced by the recent evidence on aspirin for primary prevention—it now appears

there is no net benefit for aspirin use in primary prevention of cardiovascular disease. The over-enthusiasm for the efficacy of statins in primary prevention has become even clearer (in all age groups) following a very recent meta-analysis of statins for primary prevention in patients at any age at high risk of cardiovascular disease which shows no effect on all-cause mortality.[4]

Harms

There are potential harms in indiscriminate prescribing. There are the obvious direct harms of the drug, and reports of musculoskeletal, cognitive and affective side effects have clear implications for quality of life in an older person—use of statins increases the odds of musculoskeletal complaints 1.5-fold in primary care patients.[5]

The second problem is the potential for polypharmacy and drug interactions that this indiscriminate approach to medicine use carries. Polypharmacy is as much if not more of a threat to health in older age as chronic disease.[6,7]

Assessing the value of medicines for prevention in old age should consider duration of life extension, length of treatment, and take into account mortality and morbidity due to all causes as well as the harms attributable to treatment. Using this model, some preventive interventions will provide overall benefits in older populations. Others, statins included, will not.

This shows the clear danger in taking fragments of information—looking at partial, statistical lives of populations and applying them to the complex life of an individual. An older patient who has elected to 'reduce the risk of heart attack' may make a different decision when told 'you will not extend the duration of your life and you will increase your risk of being diagnosed with, and dying of, cancer' The balance of risks has a much broader scope than the adverse effects of single drugs.

The key contraindication to the use of statins over 75 is the lack of evidence that life will be either better or longer. Individuals over age 75 who are still only 'at risk' have probably won the cholesterol race.

References

1. de Ruijter W, Westendorp RGJ, Assendelft WJJ, et al. Use of Framingham risk score and new biomarkers to predict cardiovascular mortality in older people: population based observational cohort study. BMJ. 2009 January 13, 2009;338(jan08_2):a3083–.
2. Shepherd J, Blauw GJ, Murphy MB, et al. Pravastatin in elderly individuals at risk of vascular disease (PROSPER): a randomised controlled trial. The Lancet. 2002;360(9346):1623–30.
3. Mangin D, Sweeney K, Heath I. Preventive health care in elderly people needs rethinking. BMJ. 2007 August 11, 2007;335(7614):285–7.
4. Ray KK, Seshasai SRK, Erqou S, et al. Statins and all-cause mortality in high-risk primary prevention: a meta-analysis of 11 randomized controlled trials involving 65 229 participants. Arch Intern Med. 2010 June 28;170(12):1024–31.
5. Mosshammer D, Lorenz G, Meznaric S, Schwarz J, Muche R, Morike K. Statin use and its association with musculoskeletal symptoms—a cross-sectional study in primary care settings. Fam Pract. 2009 April 1, 2009;26(2):88–95.
6. Frazier S. Health outcomes and polypharmacy in elderly individuals: an integrated literature review. J Gerontol Nurs. 2005 Sep;31(9):4–11.
7. Trygstad TK, Christensen D, Garmise J, Sullivan R, Wegner S. Pharmacist response to alerts generated from medicaid pharmacy claims in a long-term care setting: results from the North Carolina Polypharmacy Initiative. J Manag Care Pharm. 2005 Sep;11(7):575–83.