Preventive health care in elderly people needs rethinking

Dee Mangin, Kieran Sweeney, and **Iona Heath** argue that, rather than prolonging life, preventive treatments in elderly people simply change the cause of death—the manner of our dying

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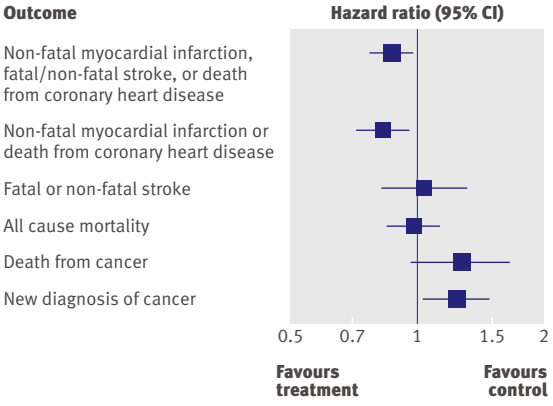
Preventive health care aims to delay the onset of illness and disease and to prevent untimely and premature deaths. But the theory and rhetoric of prevention do not deal with the problem of how such health care applies to people who have already exceeded an average lifespan. In recent years, concerns about equity of access to treatments have focused on ageism. As a result, preventive interventions are encouraged regardless of age, and this can be harmful to the patient and expensive for the health service. In rapidly ageing populations, we urgently need to reappraise the complex and uncomfortable relations between age discrimination, distributive justice, quality, and length of life.

The epidemic of cardiovascular disease

In the richer countries of the world, improved social conditions combined with immunisations and antibiotics have rapidly reduced the rates of death from infectious diseases. People saved from these epidemics now live long enough to face the new "epidemic" of cardiovascular disease, which is the focus of huge investment and endeavour in health promotion. **The national service framework for** cardiovascular disease aims to reduce the number of people dying from coronary heart disease by 40% by the year 2010 with advice that standards set out in this framework apply to all people, irrespective of age.[1] But **what will be the next most common cause** of death—the next epidemic? Our bodies have a finite functional life and age is a fundamental cause of disease.[2] By using preventive treatments to reduce the risk of a particular cause of death in elderly people are we simply changing the cause of death rather than prolonging life?

Three factors fuel this possibility. **Firstly, single** disease perspectives lure researchers and guideline groups into assuming that improved outcomes for the index condition mean that everybody with that condition should be treated, irrespective of the overall effect on population mortality and morbidity. Secondly, sensitivity about age discrimination prevents us from looking at things differently when dealing with an elderly population. Finally, drug companies make huge financial gains if effective interventions in relatively small populations become standard care for all people at risk of that condition.

Research estimates of differences in the absolute risk of an adverse outcome enable us to assess the potential benefits of treatments. The number needed to treat is calculated from the reduction in absolute risk and can help clinicians assess the balance between the burden of treatment and possible benefit. This measure is most useful for younger people in whom a single disease is more likely to have a significant effect on mortality and morbidity. The number needed to treat works best with acute conditions and less well with chronic conditions.[3] In older people, the likelihood of many compounding diseases increases, and the absolute risk of dying is higher because they are nearer the end of their life. This may magnify the apparent effect of a single intervention for a specific condition while overall survival is only minimally affected. **The use of statins to prevent cardiovascular** disease provides a case study for examining these issues further.



Cardiovascular outcomes, all cause mortality, and cancer outcomes in the PROSPER study

Lipid lowering treatments in elderly people

Currently, we use evidence from younger populations and extrapolate this to elderly ones. Anxiety about age discrimination means that no upper age limit exists for assessing cardiovascular risk. However, evidence for the effects of prevention of heart disease with drugs is scant in elderly people. The largest study in this group is the **pravastatin in elderly individuals** at risk of vascular disease (PROSPER) trial. In this trial more than 5000 participants, aged 70-82 years, were followed up for an average of 3.2 years.[4]

Pravastatin had a clear but small effect on mortality and morbidity from cardiovascular disease using the primary composite end point (absolute risk reduction

2.1%, number needed to treat 48; figure). These data are used to underpin the study conclusions and those of subsequent guidelines that vascular prevention strategies in middle aged people should also be applied to elderly people. However, examination of all mortality and morbidity data is revealing.[4] Pravastatin showed no benefit over placebo for any outcome in elderly women and despite a change in composite cardiovascular outcomes, all cause mortality stayed the same (hazard ratio 0.97, 95% confidence interval 0.83 to 1.14; figure), inferring that mortality and morbidity from other causes must have increased. Rates of cancer diagnosis and death were higher in the treatment group than in the placebo group. The difference was significant for a new diagnosis of cancer (1.25, 1.04 to 1.51; absolute risk increase 1.7%, number needed to treat 59; figure) and almost significant for mortality from cancer (1.28, 0.97 to 1.68).

Treatment can sometimes be justified because of reduced morbidity even if mortality does not change, but the increase in cancer diagnoses in the PROSPER trial counters this argument. To assess whether

"It is an art of no little importance to administer medicines properly: but, it is an art of much greater and more difficult acquisition to know when to suspend or altogether to omit them"

Philippe Pinel, 1745-1826

pravastatin caused cancer, the authors of the study conducted a brief meta-analysis of the incidence of cancer in major statin trials; they found no difference between the statin and placebo arms. A more extensive meta-analysis also found no convincing evidence for this hypothesis.[5] As none of the studies apart from PROSPER looked at elderly patients, the more likely reason for the results seen in elderly patients is substitution of cause of death, and the meta-analysis does not test this hypothesis. Perhaps we are seeing diminishing returns of prevention on overall life extension in older age.

Are we further blighting old age?

We are describing a contemporary phenomenon that is historically unprecedented. When we vaccinate children in infancy, we are selecting out a cause of death for them, in this case justifiably, because deaths from infectious disease tend to occur prematurely. It is only when we select out causes of death for people who have already exceeded the average lifespan that the endeavour becomes morally questionable.

Many patients fear the manner of their dying more than death itself and, despite the distressing nature of some cardiac deaths, many people regard coronary heart disease as a "good way to go" in old age.[6] By providing treatments designed to prevent particular diseases, we may be selecting for another cause of death unknowingly, and certainly without the patient's informed consent. This is fundamentally unethical and undermines the principle of respect for autonomy.

Clinical decision making in relation to disease prevention carries extra responsibilities.[7] Preventive treatments do not relieve suffering directly but reduce the risk of future suffering. As a degree of persuasion is involved in starting preventive treatments,[8] clinicians must be reasonably certain they will fulfil their promise. Prevention has side effects other than the hazards of the treatment—in particular, the shadow cast over a currently healthy life by the threat of disease, which might be magnified in elderly people for whom mortality looms closer. When we convey risk to any patient we should be cautious—it is like putting a drop of ink into the clear water of the patient's identity, which can never be quite clear again.[9]

Financial incentives for doctors that are linked to guidelines and targets, such as the quality and outcomes framework in the United Kingdom, may coerce doctors into persuading patients to accept such preventive treatments.[8] The evidence that paying for performance changes health care is clear.[10] Whether it improves health care is not always so clear.[11]

Attempting to reduce the costs of these epidemics may be a motivator for the government, but the cost of health care is greatest in the year before death whenever it occurs.[12] The best interests of elderly people, who have paid a lifetime of taxes, might lie in investing that money in health care that will genuinely relieve suffering. Cataract operations, joint replacement surgery, and personal care of people with dementia are obvious examples. This may explain why general practitioners are not comfortable about applying the national service framework for heart disease in elderly people and their reluctance to follow guidelines for cholesterol measurement and lipid lowering agents in people over 75.[13]

This predicament shows how using fragments of information can make the answer to a complex clinical situation less clear.[14] The problem is not the data—it is the way they are interpreted and communicated to practitioners and to patients. We need a way to assess prevention and treatment of risk factors in the elderly that takes a wider perspective when balancing potential harms against putative benefits. Instead of looking at absolute risks and death prevention, we should consider overall life extension and reduction in overall morbidity, taking the duration of treatment into account. The balance of risks will need to be assessed in broader terms than the adverse effects of drugs. What risk of cancer is acceptable to prevent death from a myocardial infarction? We should not carry on extrapolating data from younger populations and using linear models that use absolute risks of disease specific mortality and morbidity rather than all cause mortality and morbidity. If we do, the only ones to benefit will be drug companies, with increasing profits from an ageing population consumed by epidemics rather than enjoying their long life.

SUMMARY POINTS

- Single disease models should not be applied to preventive treatments in elderly people
- Preventive treatments in elderly people may select cause of death without the patient's informed consent
- Preventive use of statins shows no overall benefit in elderly people as cardiovascular mortality and morbidity are replaced by cancer
- A more sophisticated model is needed to assess the benefits and harms of preventive treatment in elderly people

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1 National Health Service. *National service framework. Coronary heart disease.* Preventing coronary heart disease in high risk patients. www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4094275.
2 Link BG, Phelan J. Social conditions as fundamental causes of disease. *J Health Soc Behav* 1995:80-94.
3 Lubsen J, Hoes A, Grobbee D. Implications of trial results: the potentially misleading notions of number needed to treat and average duration of life gained. *Lancet* 2000;356:1757-9.
4 Shepherd J, Blauw GJ, Murphy MB, Bollen EL, Buckley BM, Cobbe SM, et al. Pravastatin in elderly individuals at risk of vascular disease (PROSPER): a randomised controlled trial. *Lancet* 2002;360:1623-30.
5 Bjerre LM, LeLorier J. Do statins cause cancer? A meta-analysis of large randomized clinical trials. *Am J Med* 2001;110:716-23.
6 Emslie C, Hunt K, Watt G. "I'd rather go with a heart attack than drag on": lay images of heart disease and the problems they present for primary and secondary prevention. *Coronary Health Care* 2001;5:25-32.
7 Sackett DL. The arrogance of preventive medicine. *CMAJ* 2002;16:363-4.
8 Beauchamp TL, Childress JF. *Principles of biomedical ethics*. 5th ed. Oxford: Oxford University Press, 2001.
9 Gray DP. Evidence based medicine and patient centred medicine: the need to harmonise. *J Health Serv Res Policy* 2005;10:66-8.
10 Petersen LA, Woodward LD, Urech T, Daw C, Sookanan S. Does pay-for-performance improve the quality of health care? *Ann Intern Med* 2006;145:265-72.
11 Fleetcroft R, Cookson R. Do the incentive payments in the new NHS contract for primary care reflect likely population health gains? *J Health Serv Res* 2006;11:27-31.
12 Wanless D. *Securing our future health: taking a long-term view, an interim report.* London: HM Treasury, 2001. www.hm-treasury.gov.uk/consultations_and_legislation/wanless/consult_wanless_index.cfm.
13 Hippisley-Cox J, Pringle M, Cater R, Coupland C, Meal A. Coronary heart disease prevention and age inequalities: the first year of the national service framework for CHD. *Br J Gen Pract* 2005;55:369-75.
14 Tsoukas H. The tyranny of light: the temptations and the paradoxes of the information society. *Futures* 1997;29:827-43.

Why don't doctors use HTML?

As a regular browser of the BMJ's online Rapid Responses, I've noticed that most contributors don't format their entries in HTML (hypertext markup language). Perhaps they don't know basic HTML code, or they just don't bother to use it. Either way, it's a great shame because HTML is extremely easy to learn and use, and formatted letters are a lot more aesthetically pleasing and therefore easier to read.

I've performed a quick audit of recent Rapid Responses. In the past 21 days, 334 responses have been accepted. Of these, 318 (95.2%) were completely unformatted, and 15 (4.5%) were formatted. Special mention goes to the author who used "XX" to separate paragraphs, making his contribution (0.3%) readable without the use of HTML code. Of the 15 formatted responses, five were authored by clinicians; the others were submitted by software developers, an author, a lawyer, a professor of computer science, a medical student, and a naturopathic medic.

Appearances are important, and when I read unformatted but otherwise excellent Rapid Responses, I often think the contributors' gems of wisdom and knowledge have been done no justice by being squashed into a single paragraph devoid of indentation or font formatting.

If you learn only one piece of HTML code it should be the paragraph code, which allows you to leave line spaces between paragraphs simply by inserting at the beginning of each paragraph and at the end.

If you're adding references to your letter, you might also want to remember the code for italic and bold letters:
italic becomes *italic*

bold becomes **bold**

If you're using quotations or excerpts, the <blockquote> </blockquote> code can be useful. The wrapped text will be presented in its own indented paragraph.

Alternatively (and if this brief educational intervention is inconsequential), it might be worth badgering the *BMJ* for a WYSIWYG (what you see is what you get) web editor, so that contributors can submit beautifully formatted letters without having to bother with HTML code at all.

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We welcome articles up to 600 words on topics such as A memorable patient, A paper that changed my practice, My most unfortunate mistake, or any other piece conveying instruction, pathos or humour. Please submit the article on http://submit.bmj.com Permission is needed from the patient or a relative if an identifiable patient is referred to. We also welcome contributions for "Endpieces," consisting of quotations of up to 80 words (but most are considerably shorter) from any source, ancient or modern, which have appealed to the reader.