Doctors should count their blessings

EDITOR,—I should like to add my voice to Bob Bury's plea to "stop the whining" so prevalent at the moment[1]: many doctors do not realise how fortunate they are to be in the medical profession. My husband, a lecturer in his mid-40s, has been looking for work for over two years. I will never again underestimate the effect that long term unemployment has on individuals and those around them. It can be devastating. He has recently secured a position overseas, and I was due to join him. My plans were unexpectedly postponed, and so, having resigned my position as an assistant in general practice, I faced the prospect of having to find work at five days' notice. Within 48 hours I had found locum employment for an indefinite period.

I thoroughly enjoy being a doctor: I find the work stimulating, challenging, and immensely rewarding. I am confident of always having my own home and a reasonably comfortable, if never wealthy, lifestyle, and I can get work at the drop of a hat. I won't say that I never whinge, but I spend a lot more time counting my blessings.

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1 Bury B. Doctors in distress. *BMJ* 1996;312:1235. (11 May.)

Ability of bone mineral density to predict osteoporotic fractures

Conclusion of meta-analysis was unjustified

EDITOR,—We believe that the "critical appraisal skills for purchasers" approach[1 2] has greatly improved our ability to evaluate published papers. We recently considered Deborah Marshall and colleagues' meta-analysis of how well measures of bone mineral density predict the occurrence of osteoporotic fractures.[3] We asked ourselves: Does this paper show whether screening by measuring bone mineral density would be a useful approach to reducing osteoporotic fractures in our population? Our principal conclusions were as follows:

- The review addresses a clearly focused issue, and the authors selected the right sort of studies for the review
- It is impossible to tell, however, whether all the important, relevant studies have been included. Early in the search strategy the authors restricted their search to articles in English
- It is impossible to tell whether the authors did enough to assess the quality of the studies that they included. Although all the cohort studies were given a quality score, no details are given. It is thus impossible to be certain what standards qualified individual studies for inclusion
- The results from the cohort studies were broadly similar, but possible reasons for outliers are not discussed. This omission is more important for the case-control studies, because some of the (admittedly smaller) studies had extreme values for the odds ratio
- The "bottom line" of the meta-analysis is clear: the predictive ability of a decrease in bone mass of >1 SD at various sites was broadly similar (and low), except for measurements at the hip and spine, which had better predictive values for fractures at their respective sites.

It is unclear, however, why, having shown the poor sensitivity and specificity of bone densitometry for three different "lifetime incidence" scenarios (table 3 in the study), the authors did not explore the data to assess the predictive value of using a cut off of, say, 1.5 or 2 SD. This, together with our other concerns, leads us to conclude that the final key message in the paper cannot be justified: there is no evidence that individuals who will have a fracture can be identified, but the data in the published literature may not have been analysed adequately for this possibility to be confidently excluded.

Meta-analyses assume prominence in the published literature when there are no controlled trials evaluating a particular intervention. When details are missing and cannot be obtained perhaps a decision to publish should require the inclusion of a commentary to make clear the limitations of the evaluation. This would encourage critical appraisal and, more importantly, help to raise the standards of published reviews and meta-analyses.

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1 Oxford Institute of Health Sciences. *Critical appraisal skills programme: making sense of evidence about clinical effectiveness.* Oxford: OIHS, 1995.
2 Oxman AD, Cook DJ, Guyatt GH. Users guide to the medical literature. V1. How to use an overview. *JAMA* 1994;272:1367-71.
3 Marshall D, Johnell O, Wedel H. Meta-analysis of how well measures of bone mineral density predict occurrence of osteoporotic fractures. *BMJ* 1996;312:1254-9. (18 May.)

Case for screening exists

EDITOR,—Deborah Marshall and colleagues' conclusion arguing against screening for osteoporosis because bone densitometry cannot identify individuals who will have a fracture is surely perverse.[1] The one in three women who will have an osteoporotic fracture in their lifetime are likely to have reduced bone mineral density on dual energy x ray absorptiometry. I know of no evidence that women with a bone mineral density ≥ 1 SD above the mean will have such a fracture. Thus we see that high bone mineral density protects against future fracture. By screening women early—at least by the age of 50, and in my view by 40—one can implement a plan for women's long term health in relation not only to skeletal preservation but to cardiovascular risk and gynaecological problems. Doctors can at least do this for individual women, because the attitude against screening will mean that there is no integrated plan for menopausal women in Britain for the foreseeable future.

Since 60% of women have reduced bone mineral density on screening,[2] and since half of those will develop a fracture, the predictive value of bone density screening is high. There may, of course, be many reasons, including socioeconomic reasons, that will militate against such a programme, but I submit that the scientific case is as good as that for screening mammography at the age of 50 and better, as the authors admit, than that for screening of blood pressure or cholesterol concentrations.

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1 Marshall D, Johnell O, Welch H. Meta-analysis of how well measures of bone mineral density predict occurrence of osteoporotic fractures. *BMJ* 1996;312:1254-9. (18 May.)
2 Perry W, Andersson M, Mortimer C. Osteoporosis in a largely self-referred population: high prevalence but low medical priority. Why? *Miner Electrolyte Metab* 1994;20:287-93.

Authors' reply

EDITOR,—Kate Brooks and colleagues identify several points that were lacking from our review. We agree that, ideally, such details should be included in an article, but various limitations sometimes prevent this. We attempted to identify all the important, relevant studies that were available at the time. Because these were longitudinal studies and our initial searches in many languages did not identify any prospective studies reported in languages other than English, we thought it reasonable that the subsequent update over a period of about eight months should be in English only. We also consulted several of the principal investigators of these prospective studies to find out any studies that might be missing. No additional studies were identified.

Three independent reviewers with different training used a specially designed form to rate the quality of the studies. Aspects assessed included various potential biases. Although we analysed the data with and without weighting for the quality score, this did not affect the results. Brooks and colleagues comment on possible outliers. It is not clear that they were true outliers in the statistical sense, and we therefore chose to include all the results.

Measurement of bone mineral density does, of course, identify some individuals who will have a fracture, but the question is whether the number of individuals it identifies correctly is sufficient to warrant its application in a screening context—that is, whether the false positive and false negative rates are low. There are no data from controlled clinical trials about the consequences of screening by measuring bone mineral density in terms of fractures averted, although trials are in progress in Britain[1] and Sweden. Furthermore, it is not enough to identify individuals correctly as being at high risk: one must also be able to treat those identified with effective treatments. There are currently too many unanswered questions about available treatments—including their effectiveness in terms of preventing fractures, compliance rates, and the loss of benefit after treatment is stopped—to justify endorsing a screening programme.[2]

When considering the introduction of screening procedures it is of paramount importance that there is conclusive evidence that outcomes will be improved as a result.[3] It should also be borne in mind that bone density is only one of many risk factors for fractures in women; others, with similar predictive ability, can be observed or measured by doctors without the use of additional technologies (for example, history of maternal hip fracture, weight loss since age 25, and standing for <4 hours a day).[4]

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1 Torgerson DI, Garton MJ, Donaldson C, Reid DM, Russell IT. Recruitment methods for screening programmes: trial of an improved method within a regional osteoporosis study. *BMJ* 1993;305:82-4.
2 University of Leeds, University of York, Royal College of Physicians. Screening for osteoporosis to prevent fractures. *Effective Health Care Bulletin* 1992;No 1.