Cost effectiveness of health checks

Effect of intervention was sustained

EDITOR,—The two papers on the cost effectiveness of health checks in the Oxcheck study emphasise the importance of the duration of the effect after the intervention.^{1,2} The principal benefit resulting from the health checks, which had the largest effect on reducing the risk of coronary heart disease, was the lowering of serum total cholesterol concentrations.³ The economic predictions were that health checks would become cost effective if the benefit was sustained for at least five years. The Oxcheck study group (of which we are members) does not have data to address this. It does have data (some previously unpublished) that are compatible with the changes in cholesterol concentrations being sustained beyond the three years of the follow up in the study.

The Oxcheck study included an invitation for annual re-examinations for a random half of those subjects seen in the first two of the four years of the trial. This enables data from these re-examinations to be compared with control data from participants having first health checks during the same year. This was the basis of our report on the effects of health checks after a single year of intervention.⁴ The data from re-examinations two and three years after the intervention can similarly be compared with control data. The study therefore offers three randomised controlled trials—of the effect of health checks after one, two, and three years. Figure 1 summarises these outcomes for mean serum total cholesterol concentrations. In these analyses baseline data were substituted for subjects who did not attend for re-examination; an analysis excluding these subjects showed a similar trend, with the reduction in cholesterol concentration being about 1% greater after intervention in both sexes.

Fig 1—Mean percentage difference in serum total cholesterol concentrations between subjects one, two, and three years after health check and controls

Comparing the three trials emphasises that cholesterol lowering was sustained. Importantly, the changes tended to become greater over time, though more so in women than men. This effect was not confined to those who attended the annual re-examinations (and therefore possibly received more intervention), because in the analyses after three years we found no difference between the half of the subjects who had entered the study in the first year and been randomised to invitation for annual re-examination and those not reviewed until the fourth year.³ The benefit was also not simply due to lipid lowering drugs changing values in a population subgroup and

thereby the population mean, because the reduction in total cholesterol concentration was found throughout the population.³

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- 1 Wonderling D, Langham S, Buxton M, Normand C, McDermott C. What can be concluded from the Oxcheck and British family heart studies: commentary on cost effectiveness analyses. *BMJ* 1996;312:1274-8. (18 May.)
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Factoring in effect on mortality from stroke increases cost effectiveness

EDITOR,—When evaluating the Oxcheck and British family heart studies David Wonderling and colleagues did not factor in the effect of reductions in blood pressure on mortality from stroke.¹ There are, however, data that allow this effect to be estimated.² For men aged 50 the Oxcheck intervention costs £2900 per life year saved (the undiscounted figure). The programme resulted in a 1.5 mm fall in diastolic blood pressure, which is likely to reduce mortality from stroke by 10%; taking this into account reduces the cost to £2600. The undiscounted figure is preferred because it more closely reflects the 1.5-2% discount rate that is recommended.³

Both programmes effectively lower the risk of disease. The British family heart study confined follow up to one year; after this the duration of its effect remains uncertain. The Oxcheck study's three year follow up allows us to pinpoint the key result from this whole body of work: the intervention is cost effective in men from the age of 50, even if it has to be repeated every three years. The figure of £2600 per life year saved stands comparison with figures for other uses of health care resources. In fact, this estimate is based on conservative assumptions, and the benefit is likely to be enjoyed for longer, giving better value for money. The Oxcheck intervention is likely to be even more cost effective in older patients as the same percentage reduction in risk is applied to a higher absolute risk. In a 55 year old man the cost is £1700 per life year saved. The Oxcheck intervention is less cost effective in women, among whom it might preferably be started at a later age.

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Authors' reply

EDITOR,—John Muir and colleagues acknowledge the importance of the duration of the effect of the intervention. They provide some additional

unpublished data, which confirm our conclusion that in the Oxcheck study the effect seems to have lasted at least three years. The reservation is that the data provided relate only to that part of the overall reduction in risk due to lowering of serum total cholesterol concentrations.

Jeffrey Graham points us to evidence that would enable us to incorporate into our modelling an estimate of the additional life years gained from the reduced mortality from stroke resulting from the observed reduction in blood pressure. In a modelling exercise of this sort it is a matter of judgment how much detail to include. Graham suggests that the effect of allowing for the life years gained from the reduction in stroke would be to reduce the undiscounted cost per life year saved from £2900 to £2600. We cannot replicate his figures, but our calculations confirm the broad order of effect, which is small. It certainly would not change the conclusions that might appropriately be drawn on the basis of inevitably crude estimates of cost per life year gained. Graham goes on to point out that the intervention would be even more cost effective for a 55 year old; again our unpublished calculations suggest that this may indeed be the case, but, without estimates of the use of resources (and hence cost) for each age group, we would be reluctant to propose a specific estimate as he does.

We acknowledged, but chose not to reopen in our paper, the continuing debate about discounting benefits, and we referenced the document Graham cites that gives the Department of Health's current position. For purposes of comparison, we thought it more useful to discount benefits at the more common rates of 0% and 6%. In fact, the undiscounted £2900 per life year gained from which Graham starts his calculations would be £3800 after discounting at 1.75%.

Graham may be right in believing that the Oxcheck intervention is cost effective, but we believe that, while substantial uncertainty about our estimates remains, our caution is justified. It is good to see, however, that our analysis in terms of cost per life year gained facilitates comparison and focuses debate.

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Government advice on sensible drinking does not conflict with the data

EDITOR,—Ian White draws attention to two points of controversy arising from the government's report *Sensible Drinking*.^{1,2} One is the report's "effective increase in sensible drinking levels," and the other is "whether specific alcoholic beverages carry more benefit than others."

The debate on whether specific alcoholic beverages carry more cardioprotective benefit than others will continue as new data come in. The most recent papers examined by White support the view that the French paradox is a complex phenomenon with many diverse factors that still need to be clarified, but the evidence suggests that the bulk of the cardioprotective effect is probably due to alcohol itself and not specific to a beverage.¹ There is therefore no conflict with the conclusions arrived at in *Sensible Drinking*, which was based on evidence reviewed to mid-1995.

White also states that, from a new analysis of a limited number of studies, he has established that the minimum all cause mortality for men occurs at a consumption below 21 units a week, with the implication that this might invalidate the government's new sensible drinking levels. The analysis of data carried out in *Sensible Drinking*—which does not, as White suggests, take a disproportionate account of any particular studies—examined all the studies that are referenced. This analysis, which incorporated White's own statistical advice, found that it was difficult to arrive at a categorical absolute point at which the minimum all cause mortality occurred on the basis of mathematical analysis of all the studies. Because of the relatively shallow base of the J shaped curve for all cause mortality, however, the report was able to conclude "that for men of all ages there is a band of minimal mortality associated with a weekly consumption between about 7 and 28 units a week." White's new point of minimum all cause mortality falls within this band and does not affect the report's recommendations. Thus the report tried to reflect a range of similar all cause mortalities in defining the new daily benchmarks rather than a categorical weekly amount: a range of consumption with similar risk seems more accurately to reflect the scientific facts.

Although the new daily benchmarks have been perceived by some people as an "effective increase in sensible drinking levels," others have noted that if drinkers in Britain complied with them then many individuals would probably reduce their overall weekly consumption.³

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Home visiting and child injury

Consider measurement issues

EDITOR,—Ian Roberts and colleagues' systematic review of home visiting programmes and the prevention of child injury and child abuse neglects a key methodological issue in the discussion.¹ The authors fail to describe the overlap between childhood injury and abuse: many injuries to children are the result of poor parenting or inadequate supervision. Injuries, particularly in young children, are sometimes the result of physical abuse or neglect but go unrecognised as such. The authors emphasise the difficulty in using reported abuse as a valid outcome measure, yet they do not discuss the importance of considering other health outcomes (such as emergency room visits or injuries) as proxy measures of abuse. In a recent review of home visitation programmes, Olds and Kitzman used data from multiple sources to highlight the importance of assessing programmes' impact on maltreatment of children.¹ Measurement of children's encounters with the health care system can be an important proxy measure of caregiving problems.

In addition, the authors claim that no other review of randomised trials has examined the effect of home visitation programmes on child abuse by using methodologic criteria proposed for scientific overviews. However, we carried out a systematic overview of the prevention of physical abuse and neglect and reached a different conclusion about home visitation.¹ In this, the

scores for methodological quality of trials were considered in reaching conclusions and a range of outcomes was reviewed in determining effectiveness of the prevention programmes. In the review by Roberts and colleagues, studies were rated on methodological rigour, but these ratings do not seem to have been taken into account in drawing conclusions. Our group concluded that home visitation can prevent physical abuse and neglect of children in high risk families.

Roberts and colleagues have carried out a careful overview of an important topic; nevertheless, failure to consider measurement issues in evaluating effectiveness of child abuse prevention programmes can lead to faulty conclusions about effectiveness.

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- 1 Roberts I, Kramer MS, Suissa S. Does home visiting prevent childhood injury? A systematic review of randomised controlled trials. *BMJ* 1996;312:29-33. (6 January.)
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Author's reply

EDITOR,—In emphasising the absence of a clear distinction between child injury and child abuse, MacMillan and Offord make a very important point. The idea that childhood injuries can be neatly divided on the basis of intent is neither sensible nor sensitive and should probably be relegated to medical mythology. It is precisely because child abuse was so difficult to diagnose, and so prone to reporting bias, that we elected not to calculate pooled estimates for child abuse. With this decision made, the methodological quality of the primary trials was irrelevant. It seemed far more appropriate to consider the effect of supportive home visiting on injury occurrence irrespective of intent, as we did.

We were wrong to claim that no previous review of randomised trials of home visitation in the prevention of child abuse satisfies the methodological criteria for scientific overviews, and we are grateful to the correspondents for drawing our attention to the excellent review which concluded that home visitation can prevent child abuse.¹ However, the correspondents claim that our review reached a different conclusion. This may be the case, but we certainly did not conclude that home visitation was ineffective. Our conclusion might best be described as an open verdict. To argue, in the absence of valid evidence, that home visitation was ineffective would have been entirely inappropriate. In this regard, we were interested to note that the correspondents' statement that "many injuries to children are the result of poor parenting or inadequate supervision" was not supported by any references. Could this be another medical myth?²

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Lactate dehydrogenase should be used as marker in testicular tumours

EDITOR,—We wish to emphasise the importance of tumour markers in the management of testicular tumours and not merely in "deciding the course of the disease."¹ β Human chorionic gonadotrophin and α fetoprotein concentrations are of proved value in diagnosis, staging, the prediction of tumour behaviour, and the monitoring of treatment and recurrence of disease.² Nevertheless, an appreciable number of patients with testicular tumours, particularly those with seminomas, have normal concentrations of these two markers. Thus additional markers are needed to help in diagnosis and the selection of treatment.

We suggest that it may be useful to measure lactate dehydrogenase. Skinner and Scardino found that a raised lactate dehydrogenase level may be the sole biochemical abnormality in as many as a tenth of patients with persistent or recurrent non-seminomatous tumours.³ The lactate dehydrogenase level may be even more helpful in patients with seminoma, as only a tenth have a raised β human chorionic gonadotrophin concentration but half have a raised lactate dehydrogenase value.² This variable is valuable as a marker in the surveillance of patients with advanced seminomas, in whom it is an indicator of tumour bulk.⁴ It can also provide some prognostic information: three multivariate analyses have shown it to be a significant prognostic factor independent of β human chorionic gonadotrophin or α fetoprotein concentration in both seminomas and teratomas.⁵ We therefore believe that lactate dehydrogenase should be measured routinely both preoperatively and in the follow up of patients with testicular germ cell tumours.

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Rates of triplet pregnancies in Western Australia may be beginning to fall

EDITOR,—We have previously reported twinning and triplet rates to 1989 in a study of cerebral palsy in multiple births in Western Australia.¹ The steep rise in triplet pregnancies was particularly worrying because, although actual numbers were small, the risk of having a child with cerebral palsy was 47 times greater in a triplet than a singleton pregnancy. The main contributor to the widely reported rise in multiple births during the 1980s is thought to have been the increasing use of fertility treatments.² We continued to monitor these trends and can now report twin and triplet rates to 1994; we used data to 1993 from the maternal and child health research database³ and data for 1994 from the midwives' notification of births.⁴