crime, "doing drugs," or alcohol makes life more exciting and tolerable. The boredom and lack of opportunity to start a new life soon change hope and good intentions into disillusionment and relapse.

Do colleagues have any ideas or know of successful community rehabilitation schemes to help these people find a new structure in their lives and find companionship and self respect?

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1 Smith R. "Without work all life goes rotten." *BMJ* 1992;305:972. (24 October.)

EDITOR,—Like most general practitioners I see the adverse effect of unemployment on health every day.¹ I also see the effect that the current economic situation is having on the health of those still employed, many of whom are being asked to do the work formerly done by two, three, or even more people. Their families are also presenting with problems attributable to the strain on the working member. The cost to health of unemployment extends way beyond those who have lost their jobs.

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Drugs and the exercise test

EDITOR,—K W Muir and colleagues draw attention to the wide variation in policy concerning a fundamental yet practical aspect of exercise testing: whether cardiac drugs should be stopped or continued.¹ Their findings resemble those of the British Nuclear Cardiology Group, which reported that a third of centres routinely withdrew drug treatment before radionuclide ventriculography, a third did not, and a third depended on the requesting clinician for specific instruction.²

Muir and colleagues' recommendation that all drugs should be stopped before exercise testing takes no account of the purpose of testing. We agree that diagnostic testing should be performed off drug treatment if the main aim is to see whether there is inducible ischaemia—for example, when the diagnosis of ischaemic heart disease is in doubt. When clinically there is already a strong likelihood of underlying coronary artery disease, however, the value of exercise testing shifts to its ability to assess prognosis. In this context we believe that prognostic testing gives more meaningful and useful results if undertaken without interruption of treatment.³

In mildly symptomatic patients referred for prognostic coronary angiography the accuracy of exercise testing before angiography in predicting prognostically important patterns of coronary anatomy (as a surrogate end point for worse prognosis) was unimpaired by treatment in the case of exercise electrocardiography⁴ and was enhanced in the case of exercise radionuclide ventriculography.⁵ These data suggest that in the assessment of prognosis in patients who are well controlled but nonetheless have a high clinical probability of disease, exercise testing should perhaps be undertaken only on treatment, and that there may be no additional role for testing off treatment. The ultimate question is, can coronary revascularisation and therefore angiography be safely deferred in medically treated patients with minimal symptoms unless results of exercise tests on medical treatment are "bad" or deteriorate? The resource implications point to a need for a randomised multicentre study of this important

clinical issue to rationalise the selection of patients for invasive coronary angiography and revascularisation.

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- 1 Muir KW, Rodger JC, DeBono JS, McDonald H, Irving JB. Drugs and the exercise test. *BMJ* 1992;305:808-9. (3 October.)
- 2 Underwood R, Gibson C, Tweddel A, Flint J on behalf of the British Nuclear Cardiology Group. A survey of nuclear cardiological practice in Great Britain. *Br Heart J* 1992;67:273-7.
- 3 Lim R, Dymond DS. Should antianginal medication be stopped for exercise testing? *Lancet* 1992;340:161-2.
- 4 Lim R, Kreidieh I, Elstob JE, Powe AJ, Way SJ, Dymond DS. Effect of anti-anginal medication on predictive accuracy of exercise electrocardiography for prognostically important coronary artery disease. *Eur Heart J* 1992;suppl:115A.
- 5 Lim R, Dyke L, Dymond DS. Should antianginal medication be withdrawn for exercise radionuclide angiography when coronary disease is likely? *Circulation* (in press).
- 6 Lim R, Dymond DS. Prognostic assessment of coronary artery disease by exercise radionuclide ventriculography. In: Reiber JHC, van der Wall EE, eds. *Cardiovascular nuclear medicine and MRI. Quantitation and clinical applications*. Dordrecht: Kluwer Academic, 1992:289-98.

Using guidelines

EDITOR,—We agree with Andrew Haines and Gene Feder¹ that detailed guidelines are more likely to be effective if they are implemented locally and are used interactively within the consultation.² Advances in primary care computing allow interactive guidelines to be presented on screen during the consultation.

In the United Kingdom there are now two clinical primary care computer systems (EMIS and AAH Meditel) that can use data stored in the system to generate patient specific prompts based on relatively complex guidelines. Such computer assisted guidelines will allow the needs of individual patients to be met in a more sophisticated manner than paper records and guidelines can offer. In addition, these "live" clinical guidelines can record a structured clinical record using Read codes; this will improve the assessment of health needs, enable outcomes to be measured, and in the long term provide the means for measuring health gain.

These interactive systems have yet to be scientifically validated, though non-interactive computerised guidelines have already proved their effectiveness.^{3,5} The Derbyshire integrated care diabetes project is currently addressing many of the issues raised by the authors concerning the process and outcome of health care activity across the interface of primary and secondary care.

We are confident that, in the future, effective clinical guidelines will be used interactively within a computerised medical record.

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- 1 Haines A, Feder G. Guidance on guidelines. *BMJ* 1992;305:785-6. (3 October.)
- 2 Russell IT, Grimshaw JM. The effectiveness of referral guidelines: a review of the methods and findings of published evaluations. In: Roland MO, Coulter A, eds. *Hospital referrals*. Oxford: Oxford University Press, 1992.
- 3 McAlister NH, Covey HD, Tong C, Lee A, Wigle ED. Randomised controlled trial of computer assisted management of hypertension in primary care. *BMJ* 1986;293:670-4.
- 4 McDonald CJ, Hui SL, Smith DM, Tierney WM, Cohen SJ, Weinberger M, et al. Reminders to physicians from an introspective computer medical record. A two year randomised trial. *Ann Intern Med* 1984;100:130-8.
- 5 McDonald CJ. Physicians' response to computer reminders. *JAMA* 1980;244:1579-81.

Severity of imported malaria

EDITOR,—We were interested to read that female sex is associated with severe malaria.¹ Non-immune pregnant women, especially primigravida women, are susceptible to severe malaria. Morbidity is particularly high in the first 20 weeks.² Could early pregnancy have been a confounding factor?

Stephen J Lewis and colleagues suggest that the later presentation of patients taking prophylaxis may have been due to the onset of milder symptoms. An alternative explanation could be that patients taking prophylaxis consider that they are protected from malaria and initially attribute their symptoms to flu. When working for a company in west Africa we found that many of our expatriate patients considered that they were immune to malaria if they took their prophylaxis regularly.

The suggestion that "there may be some genetic advantage [against severe malaria] in this ethnic group [Africans]" is an understatement. Far more genes are known to influence susceptibility to falciparum malaria than any other human disease. The best example is the gene causing sickle cell trait, which occurs in up to 30% of tropical Africans. Recent case-control studies in the Gambia and Kenya have shown 90% protection from cerebral and severe malarial anaemia in children with sickle cell trait.³ Thalassaemia, the commonest genetic defect in humans, also protects against malaria. This defect occurs in up to 38% of tropical Africans.

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- 1 Lewis SJ, Davidson RN, Ross EJ, Hall AP. Severity of imported falciparum malaria: effect of taking antimalaria prophylaxis. *BMJ* 1992;305:741-3. (26 September.)
- 2 Bradley DJ, Newbold CI, Warrell DA. Malaria. In: Weatherall DJ, Ledingham JGG, Warrell DA. *Oxford textbook of medicine*. 2nd ed. Oxford: Oxford University Press, 1987:5.475-502.
- 3 Hill AVS. Malaria resistance genes: a natural selection. *Trans R Soc Trop Med Hyg* 1992;86:225-6.

EDITOR,—In their investigation of the influence of chemoprophylaxis on the severity of malaria in travellers Stephen J Lewis and colleagues, in their own words, "used data collected under field conditions" to test a precise hypothesis on which several other relevant variables, which may not have been recorded in the case notes, have an undoubted influence.¹ A variable not included in their analysis is the patients' use of treatment for malaria.

In a prospective study of 249 non-immune patients with malaria admitted to the Hospital for Tropical Diseases 70 had received malaria treatment, 28 within a month of their first symptom. Chloroquine was the main drug used and has an elimination half life of over 30 days. This may well have affected the severity of the disease and clinical presentation. In contrast with Lewis and colleagues' results, our analysis of the seven day latency in non-immune subjects (malaria presenting within seven days of return) showed similar proportions of travellers not using prophylaxis (23/43, 54%), taking inadequate prophylaxis (34/65, 52%), and reporting full compliance (23/45, 51%). This analysis excluded 96 of the patients, whose first symptom occurred abroad.

The authors' hypothesis is not supported by data on the impact of chemoprophylaxis in fatal malaria. In 89 of 99 fatal cases reported by surveillance bodies in the United States and Britain (Malaria Reference Laboratories, personal communication)² data on use of prophylaxis were available. Two fifths of the patients were using chemoprophylaxis at the time of presentation with malaria. The mean time to clinical presentation was 6.5 days in those who were not using chemoprophylaxis and 7 days in those who were (*t* test, *p*=0.6). Thus in this

retrospective analysis there does not seem to have been any protection to patients reportedly using chemoprophylaxis.

Although the authors acknowledge the poor quality of their data, I suggest that these data are not complete or accurate enough for testing or confirming their hypothesis.

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1 Lewis SJ, Davidson RN, Ross EJ, Hall AP. Severity of imported falciparum malaria: effect of taking antimalarial prophylaxis. *BMJ* 1992;305:741-3. (26 September.)

2 Centers for Disease Control. *Malaria surveillance summaries*. Atlanta: CDC, 1981-8.

EDITOR,—Stephen J Lewis and colleagues neglect the importance of immunity in their analysis of the associations of severe and mild malaria with anti-malarial chemoprophylaxis.¹ They state that “Africans living in Africa and those living in the United Kingdom were combined to form one group as they appeared to have the same proportions of severe versus mild malaria.” This statement is not compatible with my clinical experience. Immunity rather than drug prophylaxis is the best predictor of whether a patient gets severe or mild malaria, and an individual’s previous exposure to malaria is more significant than his or her ethnic group alone.

Most textbooks of tropical medicine discuss malaria in immune and non-immune patients in separate sections. It is not valid to combine data from a study of immune and non-immune subjects and draw conclusions about the time to presentation or association with sex or indeed the effect of prophylaxis on the severity of malaria generally.

An impressive protective effect of drug prophylaxis was found in the white ethnic group. Because in the African patients there is the confounding factor of acquired immunity the study should have been restricted to the non-immune white group alone.

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An alternative to QALYs: saved young life equivalent (SAVE)

EDITOR,—Erik Nord correctly describes public resentment against the use of quality adjusted life years (QALYs) for determining priorities in health care programmes, particularly regarding the assignment of a lower value to individuals with a disability.¹ He also makes the point that the QALY emphasises the degree of health improvement and often disregards the starting and end points. He suggests that health care outcomes may alternatively or additionally be measured relative to a unit of saving a young life (SAVE).

This unit, however, is not adequately defined. Differing clinical situations such as saving a neonate with intensive care, saving a nearly drowned infant, and resuscitating a multiply injured teenager would all be equivalent to one SAVE unit. The relative value or equivalence number given to other interventions and outcomes could consequently vary depending on which definition of SAVE units the judges used for calibration. Attitude and knowledge may also vary considerably within and between groups of judges asked to compare health care outcomes, which would introduce bias. At best the SAVE unit represents a possible proxy measurement of

relative public attitude towards health problems; but as judges’ responses would depend on their own knowledge and experiences they would be a jury rather than judges. It is the managers and health care workers who should have the responsibility to be the judges, as only they have the collective knowledge and expertise of making explicit decisions regarding the appropriate use of finite resources.

Rational choices between health care programmes can be achieved only by procuring accurate, timely, and comparable data. This goal can be realised by adopting a unified language of health, which the NHS is developing with the Read coding system. The use of this coding thesaurus to capture the complete electronic medical records will allow accurate analysis of case mix and health care outcomes. Using this common, defined language of health—not crude proxy comparative units—will enable both managers and clinicians to evaluate the quality and cost effectiveness of health care provision.

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1 Nord E. An alternative to QALYs: the saved young life equivalent (SAVE). *BMJ* 1992;305:875-7. (10 October.)

EDITOR,—Attempts to quantify the benefits of healthcare interventions are increasingly important in today’s economic climate. Erik Nord’s suggestion of the “saved young life equivalent” (SAVE)¹ as the standard against which possible benefits are compared does, however, raise several issues. He states that saving the life of a young person and restoring him or her to full health is used as the chosen unit of measurement, as “most people will probably regard it as the maximum benefit that a single individual can obtain.” This (if true) is presumably because a healthy young person is perceived to have maximum potential in terms of number of years remaining to work and contribute to the economy and society. This concept automatically disadvantages patients who are older or disabled (mentally or physically), who by definition can never by any intervention gain one SAVE. Those interventions required by older people in a time of limited resources would, it seems, be authorised only if they were cheap.

The whole basis of the SAVE hypothesis is that societal attitudes determine medical priorities. Though the views of the population need to be taken into account, there is a distinct danger that this procedure might enshrine into the funding system false views about therapy options and their chances of success. If those polled are given information about the procedures they are assessing before they make a decision whose version of the truth will they receive? We are all aware of the strength of opinions held by opposing camps on the merits of many (even well established) procedures. Society’s prejudices are bound to influence people’s responses. As a recent King’s Fund report stated, “Personal preferences about the form one’s life should take do not yield social judgments about how lives in general are to be treated.”²

Even if rating scales are accepted as a tool of assessment they are, as Nord admits, unstandardised. It has recently been found that the efficiency with which any scaling procedure can capture and represent personal preferences for health care is largely unknown.³ If median results are used, as suggested by Nord, then the views of (even large) minorities would be underrepresented. The recent pre-election surveys highlight the difficulty of accurately assessing popular opinion. Answers given in isolation are often different from those given when the consequences of the decision are immediately relevant.

The rationing system within health care is

becoming more explicit, and tools for assessing public opinion are needed. I am not convinced that the SAVE system is what is required.

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2 King’s Fund. *Cost and choice in healthcare*. London: King Edward’s Hospital Fund for London, 1988. (Ch 7.)

3 Kind P. *The design and construction of quality of life measures*. York: York University Centre for Health Economics, 1991. (Discussion paper 43.)

EDITOR,—The value of saving a young life as a unit of measurement is not easily understandable in the context of Erik Nord’s article.¹ It is understandable only in terms of the longer life expectancy provided to one saved younger. Such benefit in life years has a pivotal function in allocation of QALYs, a function that has been criticised as agist.² The age of the young life saved is unstated, begging the question whether a 30 year old ought to be allocated the same value of one SAVE as a 10 year old. Perhaps the maximum social benefit lies in preventing one abortion. Nord criticises QALYs for defining the value of health improvements as numerical health state values but recognises that SAVE would rely on the support of a similar mathematical model in order to estimate values for a vast number of outcomes not valued directly by the public.

In appealing to the public it is unclear how different outcomes are to be compared with one SAVE by relying on social values. The example given is that more value could be placed on outcomes entailing less benefit to more severely affected people who would be discriminated against by QALYs. This flexibility results from appealing to the principle of equality, such that everyone is entitled to care and patients worse affected are as entitled as those less affected. (Nord’s suggestion that they would be more entitled simply introduces further injustice.) If we accept the equality principle, which is criticised as lacking in the QALY procedure,³ we must accept that everyone is entitled to equal care irrespective of age, sex, race, and other qualifiers.

The benefit of having one’s life saved is unarguable, but the value of life to an individual does not necessarily diminish with age. It does, however, diminish in societal terms, which look to productivity and the “fair innings” argument.¹ Subscribing to such social values may discount significant services to elderly people, and the adoption of one SAVE as a unit of measurement could dangerously entrench agism.

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1 Nord E. An alternative to QALYs: the saved young life equivalent (SAVE). *BMJ* 1992;305:875-7. (10 October.)

2 Harris J. More and better justice. In: Bell JM, Mendus S, eds. *Philosophy and medical welfare*. Cambridge: Cambridge University Press, 1988: 75-96.

3 Lockwood M. Quality of life and resource allocation. In: Bell JM, Mendus S, eds. *Philosophy and medical welfare*. Cambridge: Cambridge University Press, 1988:33-55.

AUTHOR’S REPLY,—The SAVE procedure allows evaluators of health care to take account not only of the amount of health produced but also of any distributional consideration they might find relevant. Most people seem to consider prolonging the life of a young person more important than prolonging the life of an old person.¹ Before implementing the SAVE procedure in a health programme evaluation society would have to decide more specifically to what extent age should count. Unlike in the conventional QALY procedure it need not be very much. For instance, we need not