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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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.)
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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.)
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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