examination, but 40% or so of colorectal cancers can be visualised within 25 cm on rigid sigmoidoscopy and 60% within 60 cm on flexible sigmoidoscopy.⁸⁻¹⁰

Should general practitioners be encouraged to acquire the equipment and skill to perform sigmoidoscopy or would resources be better used in providing fast track access to rigid or flexible sigmoidoscopy or colonoscopy in an outpatient setting?¹¹⁻¹³ Although the latter would seem to offer an ideal service for patients and result in earlier and more accurate evaluation of lower bowel symptoms, advocates of practice based investigation assert that rigid, and possibly flexible, sigmoidoscopy is within the scope of most general practices.^{14 15} The equipment required for rigid sigmoidoscopy is not expensive, although flexible sigmoidoscopes are costly; neither investigation attracts payment as a minor surgical procedure. Performing these investigations in general practice would benefit patients, avoiding the delay and anxiety associated with an outpatient visit, and may use resources more effectively, particularly in fundholding practices.¹⁶

Concerns must, however, exist about training and skill and the accuracy of investigations performed relatively infrequently—even if one partner undertakes the procedure in a large group practice. Patients with suspicious rectal bleeding in whom rigid sigmoidoscopy is non-contributory will still require referral to hospital, as will those in whom colorectal polyps or cancer are identified. Initially patients with inflammatory bowel disease may be managed in general practice, but some will eventually require specialist supervision.

Many general practitioners have special skills in managing disease. Restricting their activity would not only be demoralising but would run counter to the trend towards long term management of important medical conditions in general practice. Few general practitioners want to become mere signposts to hospital, and many regard the provision of increasingly comprehensive medical care as a priority in practice development.

General practitioners should be able to decide whether they

want to provide these kinds of services for their patients. This has clear implications for adequate instruction during vocational training and for recognising sigmoidoscopy as a minor surgical procedure. Within a health district it would be reasonable for some general practitioners to develop sigmoidoscopy in their practice; others would be supported by outpatient services sensitive to the need for speedy investigation of patients at high risk of colorectal malignancy. In these services the provision of sigmoidoscopy and colonoscopy would be determined by discussion between general practitioners and specialists.

ROGER JONES

William Leech Professor of Primary Health Care,
Primary Health Care,
The Medical School,
Newcastle upon Tyne NE2 4HH

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Cardiac imaging with radionuclides

A useful addition to electrocardiography and echocardiography

Advances in cardiovascular imaging have made accurate diagnosis of cardiac disease easier. Cardiologists, particularly those in teaching centres, now have a wide range of radionuclide techniques to supplement clinical examination, electrocardiography at rest and during exercise, and echocardiography. These include radionuclide ventriculography, perfusion imaging, infarct avid imaging, and, in the most privileged locations, positron emission tomography.

Although echocardiography is already available in most district general hospitals, cardiac radionuclide investigation is not. Only half of the health districts in England and Wales perform cardiac radionuclide investigation¹; a recent survey found that the rate of such investigation in Britain was one fifth that in the United States.² This reflects the limited facilities for this technique but also the lack of importance that British physicians place on these tests.

Determining the optimal use of these techniques is difficult, and American studies suggest a high rate of inappropriate use.^{3 4} Good comparative studies are still needed to clarify each technique's role in diagnosis, but in their absence doctors should at least be aware of cardiac radionuclide

investigations and understand their principles, main uses, and limitations.

Ventriculography, with a radionuclide that is retained within the blood pool, can be used to estimate ejection fraction, one of the most important determinants of prognosis, both in chronic ischaemic heart disease and after myocardial infarction.^{5 6} Unlike echocardiography, a radionuclide study is not dependent on finding an adequate ultrasonic window. Although anatomical detail is much better with ultrasonography, the isotope technique has the advantage of readily assessing left ventricular function, even in the presence of akinetic or dyskinetic segments. Atrial fibrillation, however, reduces the reliability of both techniques, particularly if the ventricular rate is not well controlled.

Myocardial perfusion imaging depends on the use of agents such as thallium-201, which are taken up by perfused myocardium in proportion to blood flow. Ischaemic or infarcted muscle appears as a "cold spot." In this test perfusion images obtained immediately after stress (usually exercise) are compared with those at rest. The quality of the image is very important for interpreting the results and has

been much improved by the introduction of single photon emission tomography. In one study planar imaging had a sensitivity of 73% and a specificity of 50% whereas single photon tomography produced values of 80% and 75% respectively.⁷ The posterior aspects of the heart are poorly visualised with the planar technique as sensitivity is low for lesions of the left circumflex artery. Although tomography requires an expensive gammacamera and computing facility, it can also be used for other, non-cardiac forms of nuclear imaging.

The quality of information from perfusion imaging is limited by patients' ability to exercise and increase their coronary artery blood flow. A poor heart rate response to stress greatly reduces the accuracy of this test,⁸ although pharmacological stressors to increase coronary blood flow, such as intravenous dipyridamole, adenosine, or dobutamine, may be used in such patients.

Perfusion imaging is particularly useful in patients with an equivocal electrocardiographic response to exercise testing who require further non-invasive assessment. The addition of thallium imaging improves the sensitivity of exercise electrocardiography from 68% to 89% and the specificity from 77% to 89%.⁹ Information can also be obtained in patients with electrocardiographic abnormalities at rest, such as left bundle branch block, left ventricular hypertrophy, and those due to digoxin, in whom interpretation of an exercise test is unreliable. This test may be used to identify the most important coronary artery stenosis for angioplasty in patients with multivessel disease. Lastly, physical disability may prevent the use of exercise testing to assess chest pain but does not preclude use of pharmacological stress for myocardial perfusion imaging. Although thallium-201 is still used most commonly, the more expensive technetium-99m methoxy isobutyl isonitrile with its better imaging qualities and lower radiation dose is being used more often; reports suggest a better sensitivity with technetium than thallium.¹⁰

Myocardial viability can be assessed by using radiolabelled metabolic substrates with positron emission tomography. Few places offer this type of imaging, but thallium-201 has been used as an alternative.¹¹ Patients with suspected myocardial infarction rarely require radionuclide imaging with infarct avid agents such as technetium-99m pyrophosphate or antibodies to myosin labelled with indium-111 to confirm the diagnosis, but these agents are helpful in some patients who

have an atypical cardiac enzyme response or non-diagnostic electrocardiographic findings or who have had cardiopulmonary resuscitation with cardioversion.

Radionuclide investigations in cardiology should be used to supplement or complement information from electrocardiography and echocardiography. They are useful in selecting patients for tertiary referral. Provided the hospital uses the imaging device for all nuclear imaging, the cost of individual cardiac investigations is relatively cheap compared with cardiac catheterisation. The tests are probably best performed under the combined direction of a specialist in nuclear medicine and a cardiologist as this ensures the important marriage of clinical information with the patient's images. All regional cardiac centres have access to these types of investigation. The finding that only half of the health districts in England and Wales perform cardiac radionuclide investigation suggests that it probably is an underused facility.

ALLISTER HARGREAVES
Lecturer in Medicine

ALEXANDER L MUIR

Postgraduate Dean

Edinburgh Post Graduate Board for Medicine

Department of Medicine,
Royal Infirmary,
Edinburgh EH3 9YW

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Cancer chemotherapy and quality of life

Cancer trials should include measures of patients' wellbeing

When a cure of advanced cancer is a realistic prospect both patient and doctor seem willing to accept the toxicity associated with chemotherapy. Patients with Hodgkin's disease, high grade non-Hodgkin's lymphoma, or metastatic testicular tumours rarely reject the offer of chemotherapy because of concern about their quality of life during treatment. The hope of cure is weighed against the certainty of death and the choice clarifies the issue. Chemotherapy may also be offered, however, as treatment for advanced cancers of the gastrointestinal tract, lung, or breast—in which the prospect of cure is slight. In these circumstances a decision for or against treatment must be based on the probability of achieving palliation.

By definition, palliative chemotherapy ought to improve the quality of life of a patient with cancer; yet evidence that it does so is often difficult to find. End points indicating quality of life have rarely been included in the assessment of outcome in clinical trials.¹² The traditional end points are survival, disease free survival, tumour response rate, and duration of response. Even where accompanied by data on toxicity those results are often inadequate to answer the question "Will I be better off if I have the treatment?" That is the question the patient wants answered, and the doctor is expected to help in this judgment; but judgments vary and are particularly likely to do so when based on information somewhat removed from the main question. As Pope indicated, "tis with our