

the efficiency of prescribing. Overestimating the cost of cheap drugs and underestimating the cost of expensive ones may bias general practitioners' choices towards higher cost products, thus inflating the NHS drugs bill. A future paper will investigate the relation between general practitioners' perceptions of costs and their prescribing patterns.

This study highlights a demand among Scottish general practitioners for better information about drug costs. The information which they currently receive is limited to total numbers of prescriptions and costs for the doctors themselves, their practice and health board, and for Scotland as a whole. There are, however, plans to introduce in 1990 a more detailed information system for Scottish general practitioners, similar to the prescribing analyses and cost (PACT) system recently implemented in England.

There are also plans to include drug costs in the computerised module of the general practice administration system for Scotland (GPASS) and to extend the viewdata computer system (VADIS) to an increasing number of general practitioners in Scotland.¹ The viewdata computer system would provide doctors with instant up to date information on clinical attributes of drugs as well as the relative costs of products with the same therapeutic effects. Nevertheless, as only 37% of practices in Scotland are currently computerised (West Coast Computer Consortium, Paisley, personal communication) a major investment will be required to provide these systems and update them regularly.

Given the deficiencies in general practitioners' knowledge of drug costs identified in this paper, such an investment may be necessary if the government's proposals for prescribing budgets are to work.

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- 1 Secretaries of State for Health, Wales, Northern Ireland, and Scotland. *Working for patients*. London: HMSO, 1989. (Cmnd 555.)
- 2 Taylor RJ, Bond C. A study of changes in the prescribing habits of general practitioners. Report from the department of general practice, University of Aberdeen, to the Scottish Home and Health Department. (Limited circulation.)
- 3 Long MJ, Cummings KM, Frisof KB. The role of perceived price in physicians' demand for diagnostic tests. *Med Care* 1983;21:243-50.
- 4 Robertson WO. Costs of diagnostic tests: estimates by health professionals. *Med Care* 1980;18:556-9.
- 5 Skipper JK, Smith G, Mulligan JL, Garg ML. Physicians' knowledge of cost: the case of diagnostic tests. *Inquiry* 1976;12:194-8.
- 6 Ryan M, Yule B, Bond C, Taylor R. *Prescribing costs: a study of Scottish general practitioners' attitudes and knowledge*. Aberdeen: University of Aberdeen, 1989. (Health Economics Research Unit discussion paper 05/89.)
- 7 Rowe J, Macvicar S. Doctors' knowledge of the cost of common medications. *Journal of Clinical and Hospital Pharmacy* 1986;11:365-8.
- 8 Fowkes FGR. Doctors' knowledge of the costs of medical care. *Med Educ* 1985;19:113-7.

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Screening in Practice

Health checks for adults

Godfrey Fowler, David Mant

Which tests are worth while?

Prevention and health promotion are now with us. They are included in the new terms of service of general practitioners, and all patients in the 16-74 year age group who have not been seen for three years must be offered a "health check." Most doctors will be aware that the validity of this recommendation is open to doubt. There is considerable concern about the efficacy, cost effectiveness, and feasibility of such an exercise, but it is wrong to dispose of the baby as well as the bathwater. Some tests are worth while (box): properly organised screening for smoking habit, blood pressure, cervical cancer, and breast cancer saves lives and prevents unnecessary suffering. Detailed information on appropriate screening intervals can be found in the references given in this article and more information on test efficacy in the article on the theory of screening.¹ This paper discusses some of the practical issues to be considered in making screening successful in general practice.

Practical problems

The most important practical problems facing general practitioners in the implementation of screening programmes are summarised in table I.

RECRUITMENT

A major problem with postal recruitment and with assessing coverage is accurate registration.² Little can be done about patient mobility, but motivated reception staff can make a great contribution to maintaining correct addresses. When prescriptions are

Worthwhile mass screening programmes

- Smoking habit
- Hypertension
- Cervical cancer
- Breast cancer (mammography)
- Alcohol consumption

Possible mass screening programmes

- Hyperlipidaemia (? adequate resources for management are available)
- Obesity (? effective intervention is possible)
- Faecal occult blood (if results of randomised trials are favourable)

Unnecessary mass screening programmes

- Proteinuria
 - Haematuria
 - Glycosuria
 - Bacteriuria
- (but selective urine analysis in elderly patients may be worth while and merits further research)

written on desk computers linked to the main register patients often point out an incorrect address on the prescription during the consultation. Accurate registers also allow identification and targeting of high risk groups.

QUALITY ASSURANCE

Quality assurance depends primarily on good training. This means training general practitioners in the practical theory and management of screening programmes. It also means that all staff must be

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trained in effective clinical practice. Helping patients to stop smoking is a clinical skill that needs to be acquired. Similarly, it is wrong to screen for obesity, hyperlipidaemia, or an unhealthy diet unless the patient can be given effective help, and this too requires training.³

Adequate follow up depends not only on good training and record keeping but also on a clear plan for management of disease.⁴ This is essential both for audit and for planning to meet the heavy follow up workload that screening always imposes. Quality assurance depends on adequate allocation of time and resources to follow up and clinical management of problems identified.

TIME MANAGEMENT

Acute care in general practice is necessarily based on the white rabbit principle of "keep on to the end and then stop," but this does not work for preventive care. It is likely that effective management of disease detected by screening—such as obesity—requires a magnitude of time commitment that is inconceivable within present working patterns. More research is needed to assess the minimum resources needed for effective intervention and follow up, and a strategic decision must be made on how (and if) this work can be accommodated. This may mean deciding to screen only high risk individuals (targeting) or redefining the roles of all members of the practice team (for example, more reliance on nurse practitioners in both acute and preventive services). It is harder to stop screening than to start.

Everything you need to start

In order to overcome the problems outlined above, general practitioners need to check before beginning screening that they have attended to the four essential elements of a successful screening programme outlined in table II.

SCREENING REGISTER

The basis for a successful screening register is a computer with a terminal on every desk, including the reception desk. A microchip is only as good as its user, however, and responsibility for updating addresses and screening records must be clearly identified. The key role of the reception staff cannot be over-emphasised, nor can the need for training and professional development of this group.

MANAGEMENT PROTOCOLS AND TRAINING SCHEDULE

Disease management plans (or protocols) and training schedules need to be drawn up simultaneously as they are mutually dependent. Clear guidance on the management of smoking in primary care has been published,⁵ and the *BMJ*'s "ABC" guides on alcohol and hypertension are accessible and authoritative.^{6,7} A

TABLE I—Main problems in practical implementation of mass screening programmes

Recruitment:
Poor registers
Predominance of "worried well" patients
Quality assurance:
Poor training of those undertaking screening
Poor understanding of screening principles
No quality control procedures
Inadequate record keeping
Insufficient use of information technology
Time management:
Poor understanding of sustained workload involved
Inadequate resources committed to programme
Little strategic planning

TABLE II—Requirements of starting mass screening

Screening register:
To identify patients due for screening and for follow up: someone must be designated as responsible for maintaining it
Management protocol:
To make it clear who needs following up (and how often) and when treatment is indicated
To make everyone realise how much hard work is involved
Training schedule:
To make sure you do not elicit problems for which you cannot offer effective help
Untrained staff should not undertake screening
Quality assurance schedule:
To state how the quality of measurements (for example, blood pressure), procedures (for example, smear quality), and interventions (for example, dietary advice) will be reviewed and improved

consensus statement on blood cholesterol measurement has been published⁸ and practical guidelines on hyperlipidaemia are being prepared by the British Heart Foundation and Coronary Prevention Group. Authoritative guidance on dietary management is conspicuously absent because of lack of research in this area, although some work is currently under way. The role of the general practitioner in cervical and breast cancer screening is primarily to counsel, and this requires a clear understanding of the procedures and outcome: two very clear, short booklets are available.^{9,10}

QUALITY CONTROL SCHEDULE

Quality control must also be planned ahead. For hypertension, this means deciding how often to review sphygmomanometer function, availability of a range of cuff sizes, and techniques of taking blood pressure. For cervical cytology it means regular review of the quality score of each person taking smears. For those undertaking dry chemistry in the surgery (for example, measuring blood cholesterol or glucose concentrations) a formal quality control protocol carried out daily is mandatory, and joining a quality control circle (such as that operated for Reflotron cholesterol measurement by the Wolfson laboratory in Birmingham) is strongly recommended.¹¹ For all screening programmes it means regular review of adherence to disease management protocols.

Organisational options

RECRUITMENT

There are two basic approaches to recruitment. A target population can be specifically invited for a screening procedure (population screening) or advantage can be taken of patient initiated contacts to recruit for screening (opportunistic screening). Opportunistic screening includes case finding when the screening procedure is part of a consultation initiated for other reasons. As about 90% of the population consults a general practitioner at least once every five years, opportunistic screening seems particularly appropriate for avoiding "inverse care." Unfortunately, it does not always fulfil this potential, and retrospective audits have shown that recruitment is incomplete, perhaps because reception staff (on whose shoulders the responsibility for opportunistic recruitment usually falls) find it difficult to maintain enthusiasm over a number of years. In a recent trial of population and opportunistic screening for cervical cytology, population screening performed better.¹² One obvious solution is to combine an opportunistic and a population based approach, inviting by post those who do not come opportunistically; this has proved effective in some practices.

Organisational options

Recruitment

- Opportunistic
- Population
- Mixed

Invitation

- Open ended
- Fixed appointment

Location

- Clinics
- Integrated

Staff roles

- Recruitment
- Intervention
- Follow up
- Targeting

INVITATION

The nature of the invitation is also important. This must be "consumer oriented" for best results: clear, informative, personalised, and signed by the doctor. Screening for lifestyle factors may be best done on a family rather than individual basis. There is also a basic choice (with population screening) of whether to offer a fixed appointment. Vessey and Williams showed that a fixed appointment was preferable to an open invitation for mobile mammographic screening in two general practices in Aylesbury, with little wastage of appointments (patients who could not keep their appointment were asked to phone for a different one),¹³ but this needs further assessment in other practices.

CLINICS

It is unclear whether dedicated clinics are better than integration of preventive work into routine care. Good results have certainly been reported by practitioners running asthma, diabetes, and hypertension clinics, but a recent study from this department shows that the level of recording of cardiovascular risk factors seems to be independent of whether practices organise special screening clinics (unpublished data). In small practices clinics may be difficult to organise, and in all practices the case finding element of opportunistic screening may be lost. Conversely, the organisation of clinics may be an important stimulus to the organisation of good care of chronic disease and may also facilitate patients getting mutual support from fellow sufferers. However, it is obviously the quality rather than the context of care that is important.

STAFF ROLES

Screening seems to be more effective when the screening task is shared among different members of the primary health care team. Health checks have been shown to be conducted more systematically by practice nurses than when they are left to doctors in ordinary consultations.¹⁴ But it is important that doctors do not opt out of prevention, not only because their endorsement of the nurse's activities is vital but also because they need to be involved in the follow up and management of those found positive on screening. It cannot be emphasised too strongly that finding an abnormality through screening is a disservice unless effective management follows. The role of the practice nurse and other members of primary health care teams in the long term management of conditions such as hypertension has not been fully exploited in the past. Further assessment of interventions organised by dietitians and health visitors (which can alleviate resource problems as many patients can receive expert counselling at the same time) merit further attention.

TARGETING

Targeting means selective deployment of resources. The highest recruitment rates and the best coverage of less privileged populations have been achieved by careful targeting of high risk patients. Various strategies have been suggested, including the provision

of additional medical and nursing time during routine consultations and programmes to identify and approach high risk families at their homes. Marsh and Channing have described a 15 month campaign by their primary health care team to raise the uptake of preventive care in their deprived practice population.¹⁵ This was achieved by rigorous monitoring in organisation, careful selection of patients at risk, and a direct approach (rather than waiting passively for patients to arrange a consultation). In the context of lifestyle changes it must also be remembered that the freedom of choice enjoyed by the more privileged strata of society is not always enjoyed by those at highest risk. The promotion of environmental change is as important as personal advice in the campaign against inequalities in health.

Responding to the contract

There can be no scientific justification for the contractual requirement to screen patients who do not attend the surgery when those who do attend are unlikely to have been screened. Equally, there is no scientific justification for the three yearly interval between health checks, nor for the requirement to undertake urine analysis for glucose and protein in an unselected population. By insisting on these unnecessary and possibly unethical procedures the government is likely to bring screening into disrepute and to prejudice the more worthwhile screening tasks. But, however ill advised such requirements may be, the financial provisions for computerisation, clinics, and targets, offer a new opportunity. The challenge to each general practice is to undertake at least one screening procedure well. In terms of cost effectiveness and importance to public health, screening for smoking habit and advice on stopping smoking should undoubtedly have first priority.

- 1 Mant D, Fowler G. Mass screening: theory and ethics. *Br Med J* 1990;300:916-8.
- 2 Armstrong E. The politics of inadequate registers. *Br Med J* 1989;299:73.
- 3 Francis J, Roche M, Mant D. Would primary health care workers give appropriate dietary advice after cholesterol screening? *Br Med J* 1989;298:1620-2.
- 4 Mant D, McKinley C, Fuller A, et al. Three year follow up of patients with raised blood pressure identified at health checks in general practice. *Br Med J* 1989;298:1360-2.
- 5 Ramstrom L, Raw M, Wood M, eds. *Guidelines on smoking cessation for primary care teams*. Geneva: World Health Organisation, 1988.
- 6 Paton A, ed. *ABC of alcohol*. 2nd ed. London: British Medical Journal, 1988.
- 7 British Medical Journal. *ABC of hypertension*. 2nd ed. London: BMJ, 1987.
- 8 Consensus Statement. Blood cholesterol measurement in the prevention of coronary heart disease. *Lancet* 1989;ii:115-6.
- 9 MacPherson A. *Cervical screening: a practical guide*. Oxford: Oxford University Press, 1985.
- 10 Austoker J, Humphries J. *Breast cancer screening: a practical guide*. Oxford: Oxford University Press, 1988.
- 11 Broughton P, Bullock D, Cramb R. Quality of plasma cholesterol measurements in primary care. *Br Med J* 1989;298:297-8.
- 12 Pierce M, Lundy S, Palanisamy A, Winning S, King J. Prospective randomised controlled trial of call and recall for cervical screening. *Br Med J* 1989;299:160-2.
- 13 Williams E, Vessey M. Randomised trial of two strategies offering women mobile screening for breast cancer. *Br Med J* 1989;299:158.
- 14 Fullard E, Fowler G, Gray M. Promoting prevention in primary care: controlled trial of low technology, low cost approach. *Br Med J* 1987;294:1080-2.
- 15 Marsh G, Channing D. Narrowing the gap between a deprived and an endowed community. *Br Med J* 1988;296:173-6.

ONE HUNDRED YEARS AGO

The Minister of Public Instruction in France has recently expressed opinions before the Commission which is investigating the subject of foreign practitioners in France, which will, we think, be regarded as eminently satisfactory, and which are closely in accord with the resolutions recently adopted by the College of Physicians. He considers that foreign physicians wishing to practise in France ought to submit their diplomas to the authorities, who will decide whether they are equivalent to their own, and that point being settled, the foreign physicians should then be

required to pass the final examination for the degree of Doctor of Medicine. This is almost identical with the suggestion adopted by the College of Physicians, but the Minister is apparently willing to go a good deal further, for he would make an exception in regard to foreign physicians wishing to practise at the health resorts; he would permit such physicians to practise without going through the examination, provided that their patients were only those of their own nationality. This is a very important concession, and we have no doubt that if the Minister can succeed in obtaining the support of a majority of the Chamber of Deputies for his views, all the anticipated troubles on this subject will be avoided.

(*British Medical Journal* 1890;i:495)