These findings indicate that the management of patients found to have a dyskaryotic smear does not protect completely against subsequent invasive cancer.

Three of the five cases of invasive cancer were in women aged under 35. Over the past decade mortality and incidence rates for cancer of the cervix have increased in younger women, although the rates in those under 25 are still very low compared with those in older women.²¹ Robertson *et al* described 10 cases of invasive cancer of the cervix occurring in their study of 1781 women identified with a dyskaryotic smear over 20 years.¹² It was not clear, however, whether those cases represented a significant excess or the number to be expected on the basis of the background rate or, indeed, a deficit as no statistical criteria were applied.

Our criteria for reversion to normal were more rigorous than those reported by some workers. We checked on the subsequent outcome of these patients after a further two years. Fifty five of the 157 patients classified as having reverted to normal (35%) had a record of a subsequent smear. In 53 out of these 55 women this smear was reported as negative after a mean of 17 months (range 1-47 months). Twenty one of these 53 patients had two or more negative smears subsequently. This suggests that when several adequate repeat smears remain negative over more than 18 months regression may be real rather than apparent. Almost two thirds of women, however, had no further smears, and there may have been a selection bias in the 35% who continued to have smears despite being discharged.

The poor reliability of a single negative smear to suggest apparent regression is shown by the finding that 22% of these women (83/371) had a follow up smear showing dyskaryosis. When the negative smear was also inadequate this figure increased to 40% (22/55). Our study clearly indicates the importance of following up women with dyskaryotic smears and especially those with a smear showing moderate dyskaryosis or two smears showing mild dyskaryosis. We do not wish to make recommendations about the exact details of how this follow up should be conducted in the current state of knowledge. There is no experimental evidence that prognosis is improved by colposcopic compared with cytological surveillance. We endorse the inter-

collegiate working party's proposal for a randomised controlled trial to examine costs and benefits of these two alternatives.

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Why costs of consultations in general practice vary

S E J Twaddle, A M D Porter, J G R Howie, J F Forbes

Department of General Practice, University of Edinburgh, Edinburgh EH8 9DX

S E J Twaddle, MSc, research associate

A M D Porter, MPHIL, lecturer

J G R Howie, MD, professor

J F Forbes, PHD, research fellow

Correspondence to: Mr Porter.

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Fixed costs of general practitioners' services include the costs of staff (which depend on their number and skills), investment in practice premises, and equipment. In the short term general practitioners can more easily exercise control over variable costs (those of prescribing, investigation, and referral) arising from their preferred or personal style of consultation. We present minimum estimates of the variable costs associated with prescribing, investigation, and referral behaviour during consultations in the surgery and show that the incentive for fund holding doctors to change their behaviour will depend on how costs of prescribing and referral are calculated and apportioned.^{1,2}

Patients, methods, and results

As part of a one year study of workload (1987-8) 85 principals in general practice in Lothian provided

details of consultations in their surgeries; the study was reported in detail previously.³ Information on prescribing (excluding repeat prescriptions), requests for radiography and selected diagnostic tests, and outpatient referral was collected for 21 707 consultations. The average cost of prescriptions, radiography, laboratory requests (bacteriology, virology, biochemistry, haematology), and outpatient referral (one outpatient attendance) was obtained from the Scottish Health Service's financial accounts. Capital costs were not included in these estimates of average cost. Total variable costs, representing the sum of these discretionary items of service, were calculated and expressed per 100 consultations, which corresponded with the average weekly number of consultations in the surgery reported by the doctors (table).

The mean (SD) overall variable cost per 100 consultations was £444 (88) (range £329-735). Differences in costs were largely explained by the underlying variation in prescribing behaviour. The number of prescriptions per 100 consultations ranged from 36 to 93 (mean 67 (14)). A ninefold difference in outpatient referral (mean 6 (2)) also contributed to the observed variation in cost. Differences in the style of practice, as measured by requests for diagnostic tests and radiography, were less important determinants of overall differences in cost.

Item of service	Frequency per 100 consultations	Cost per 100 consultations* (£)	Cost per 100 consultations as proportion of overall cost (%)	Cost per item (£)
Prescription	67.4 (35.5-93.2)	302.64 (159.41-418.50)	68.2	4.49
Outpatient referral	5.7 (1.4-12.0)	73.62 (17.60-156.40)	16.6	13.00†
Laboratory requests:				
Haematology	4.4 (1.0-14.6)	16.51 (3.90-55.00)	3.7	3.77
Bacteriology	3.9 (0.3-11.0)	21.41 (1.50-59.90)	4.8	5.45
Biochemistry	2.5 (0.8-7)	13.35 (0-47.10)	3.0	5.45
Virology	0.4 (0.3-3)	1.89 (0-17.70)	0.4	5.45
Radiography	2.5	14.26	3.2	5.80
Overall		443.68		

*Errors due to rounding of figures during calculation of means.
†Based on average cost of one outpatient consultation.

The percentage of the total cost accounted for by different items of service shows the trade off between the average cost per item and the relative frequency of each item. Assuming that the cost and frequency of other items remained constant, a 10% decrease in the prescribing rate would decrease the variable cost of the consultation by 6.8%. A 10% decrease in outpatient referral would result in only a 1.7% fall in the overall variable costs. Similar decreases in requests for diagnostic tests and radiography would have a negligible impact on costs. If, however, referrals were costed at £52 (roughly four outpatient attendances per referral) a 10% reduction in outpatient referral would decrease the overall variable costs by 4.4%. With this higher

estimate of referral costs a 10% reduction in prescribing would also result in a 4.5% decrease in overall variable costs. Apportioning certain hospital inpatient costs to the cost of referral would further affect the potential for reducing overall average costs.

Comment

We excluded the costs of repeat prescriptions and took the cost of an outpatient referral as being the cost of one outpatient attendance. On this basis, except in the case of prescribing, the consequences on cost of a change in clinical behaviour might be less than expected. If, however, costs of referral are taken as including costs generated by hospital staff who recall and admit referred patients a different picture emerges.^{4,5} Thus agreement on a basis for costing referrals, incorporating a reasonable way of apportioning costs generated by general practitioners and by hospital staff, is needed urgently.

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Effectiveness of eye protection in the metal working industry

Ashis Banerjee

Accident and Emergency Department, Manor Hospital, Walsall WS2 9PS
Ashis Banerjee, FRCS, registrar

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Ocular foreign bodies are an occupational hazard for people working in metal processing industries. About three or four new patients attend this department every working day with foreign bodies that entered their eye while they were working with metal. The Walsall area has many small metal processing industries. The aim of my study was to find possible reasons for the high numbers of patients presenting with such foreign bodies in the eye.

Patients, methods, and results

I performed a prospective study of patients seen in this department from 1 August 1989 to 1 February 1990 with foreign bodies that had entered their eye while they were at work. During the study nearly 25 000 new patients attended the department, which was initially at Walsall General Hospital and then, from December 1989, at this hospital. Of these patients, 472 presented with foreign bodies that had entered their eye while they were at work. I examined 164 patients during this study (149 men and 15 women).

Assessment of the patients included the nature and duration of symptoms, the likely cause of the injury, and the type of eye protection used at the time of the incident. Both eyes were routinely examined. Foreign bodies entered the eye during grinding in 42 cases, drilling in 37, hammering in 26, welding in 19,

polishing in seven, and various combinations of these in 22; 11 patients were unable to state the time or circumstances of the injury. Overall, 136 patients stated that the injury had been sustained while they were doing their usual work; 19 had been helping with work they were unused to doing and nine had been on work experience schemes.

Direct questioning established that 65 of the 164 patients had not been using eye protection when working. The table shows the reasons given for this. Many patients seemed to be sceptical about the need for these protectors, and many thought that those provided were either uncomfortable or interfered with clear vision.

Reasons for not wearing eye protectors given by 65 patients presenting with ocular foreign bodies

Reason	No
Protector not necessary for work being done	18
Protector interfered with ability to work	15
Patient was walking past someone else working	11
Protector uncomfortable	9
Patient was wearing prescription spectacles	5
Reason not provided	7

All patients eventually recovered satisfactorily, but all were asked to make more than one visit to the department, though 14 failed to do so. Seven patients were referred to the eye clinic, five with deep corneal rust rings and two with corneal scars. No intraocular foreign bodies were found.

Comment

Guidelines for the provision of eye protection at the workplace have been provided under the Protection of