correct in only 52.3% of cases, and 10% of children with a temperature of 38.9°C or higher were incorrectly identified as being afebrile.¹⁸ Other studies found that nurses and doctors were also poor at identifying the presence of fever in children.^{3,19}

General practitioners clean their thermometers in a variety of ways, and several doctors admitted to not cleaning them at all. This raises concern for the risk of cross infection. One doctor used thermometer sheaths, which are placed over the thermometer before use and disposed of after use. I am not aware of any studies that have looked into the effect of these thermometer sheaths on the accuracy of the temperature readings.

A doctor might take a patient's temperature for many reasons, but no conclusions can be made as to their importance. One reason brought to light in this study is medicolegal; however, the secretary of one of the defence societies was unable to give any examples of a doctor being found negligent simply for failing to take a patient's temperature. He did qualify this by stating that doctors may be questioned very closely about their reasons for not taking a patient's temperature and, taken with other factors, this may swing a decision for disciplinary proceedings against the doctor.

I thank Dr Nigel Hague for his help and support.

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Audit of practice based cervical smear programme: completion of the cycle

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Abstract

Objectives—To determine the effectiveness of a practice based cervical screening programme and the changing pattern of abnormal smear results and to improve the quality of care provided for patients.

Design—Audit of practice held data on cervical screening from 1980 to 1990. Changes in the programme were made after analysis of first five years' data.

Setting—Mixed urban and rural practice of 10 900 patients in Northumberland.

Subjects—Women aged 20-65 who had not had a hysterectomy.

Results—2356 (85.1%) of the 2767 targeted women had a test during 1980-5 and 2498 (89.5%) of the 2790 women had a test during 1985-90. Inviting women aged 20-25 to attend for a test increased coverage from 45.8% (146/319) in 1980-5 to 82.5% (282/342) in 1985-90. The proportion of women with abnormalities requiring hospital referral rose in the second half of the study, especially among younger women (from 17/39 (44%) to 45/64 (70%) in women aged 25-34).

Conclusions—Practice based cervical screening programmes can be highly effective. Cytological abnormalities affect patients psychologically as well as physically and practices should provide support and explanation for patients with abnormal results. Data from individual practices should be aggregated to allow health authorities to plan secondary care effectively.

Introduction

Over 2000 women every year die of carcinoma of the cervix. In England and Wales there were 13 times as many registrations of carcinoma in situ for 1981-3 as there were for 1963-5 in women aged 25-34.¹ Invasive

squamous cell carcinoma of the cervix is responsible for an increasing number of deaths among these younger women. Although most deaths from invasive carcinoma of the cervix occur in women over 60, in the three years 1986-9, 39 women died of cervical carcinoma in Northumberland, 21 of whom were under 65.²

Our practice comprises a partnership of six doctors with one vocational trainee and is responsible for a total list of 10 900 patients distributed in a mixed urban and rural area, occupying a 22.5 km (14 mile) strip of the Northumberland coast. Each doctor operates a personal list system within the umbrella of the partnership. The split site practice has a health centre in the town of Amble (four doctors) and the village of Broomhill (two doctors).

The practice population is stable (less than 5% turnover) and there has been little increase in the practice list size in the past 40 years. Most of our patients are in social class II-III, with a significant minority in social class V. The area was largely dependent on mining until the closure of Broomhill colliery in 1964. The local miners, who were initially re-employed at smaller local collieries, have gradually become redeployed in the building trade and light industry. The number of long term unemployed people remains higher than the average for the rest of Northumberland.

The practice implemented a comprehensive screening programme for the detection of cervical abnormalities in 1980. The aims of the programme were to reduce the mortality and morbidity from carcinoma of the cervix by ensuring all women aged 25-65 had a cervical smear test once every five years. We conducted this audit to compare the number of women who had a smear test with the number of women targeted by the cervical smear policy to explore our suspicion that

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the number of cytological abnormalities was increasing and to identify how provision of care could be improved.

Subjects and methods

In 1980 all women aged 25-65 were identified from the age-sex register. Their notes were searched for medical, psychological, and social problems which would have meant screening would be inappropriate. Problems which precluded screening were those that in the opinion of the woman's doctor would make the smear procedure physically or psychologically unpleasant or meaningless to the patient. In addition, the doctor's knowledge of a patient's current social habits often meant that women on holiday, in hospital, or otherwise unavailable were not sent inappropriate invitations.

Women who had had a hysterectomy for benign disease were excluded from the target group. An index card was completed for each woman in the at risk population. As the practice operates an individual list system, a separate card index of these patients was generated for each doctor. The index cards were filed alphabetically in the appropriate year in which the women would be due for recall. The index cards of women with abnormal smear results were filed in a separate area of the appropriate card index.

Women were invited for a smear test by letter once during the five years 1980-5. Women under 25 years of age who were taking the contraceptive pill were offered a cervical smear opportunistically by their own doctor or at one of the health authority family planning clinics, which occurred fortnightly at each health centre. Copy reports of the smears performed in the family planning clinics were recorded in the practice card index before being passed on to the family planning clinic.

Those who did not attend for a smear after the first invitation received a second letter of invitation that included an offer of an evening appointment. If a woman failed to attend a letter was sent by her own doctor emphasising the importance of a cervical smear test and urging her to attend. Any woman who directly refused any of these invitations was not offered another appointment until her next recall was due, thus respecting the woman's right to make a choice in the matter. The notes of these women were clearly marked to remind the doctor to discuss the importance of a cervical smear with each woman, and to offer a smear, opportunistically. This system proved quite successful, particularly among the younger age group, at subsequent attendances for contraceptive advice.

CHANGES AFTER FIRST AUDIT

After reviewing our results in 1985, we felt that the screening method, producing an attendance rate of 85.1% was adequate. Having reviewed current reports³⁻⁵ on the incidence of carcinoma in situ in younger women, we decided to send invitations to those aged 20-25 years rather than perform smears opportunistically. In addition, after discussions with

our district medical officer concerning the cytological resources available in the district we decided to offer a cervical smear every three years to women aged 20-35 and every five years to women aged 36-65.

The policy of referral to hospital was rationalised in 1986. Before this women were referred on the advice of the cytopathologist or at the clinical discretion of the doctor. The policy was changed so that any woman with one minor abnormality not requiring referral to hospital (inflammation, atypia, and mild dysplasia) was to be recalled at least annually until she had had negative results for five consecutive years. Thereafter she would be called three yearly. The case notes of any woman with a second abnormal smear result were to be reviewed by her doctor with a view to gynaecological referral, even if the cytopathologist did not suggest referral. Any woman referred back to the care of her general practitioner after hospital treatment for a cervical abnormality was to be tested annually for five years and thereafter three yearly.

The system of communicating cervical cytology results to patients was changed in 1986. Previously patients either left a stamped addressed envelope or telephoned for their results. It was decided to inform all patients of the result of their smear test by a letter generated by the practice.

Further slight amendments to the procedures occurred in 1988 when the practice became computerised. One of us (PAC) created a computer program to facilitate administration of the cervical screening programme. The computer enabled generation of accurate lists of women needing a smear, individual letters of invitation, and monthly printouts listing women with currently abnormal smear results. Printouts were checked against the notes to ensure there was no default from review. Any woman with a serious abnormal result who defaulted from hospital or practice review received a telephone call or was visited at home by the practice nurse. The computer program depends on intelligent and accurate data entry and a protocol is followed when entering data; data on abnormal smear results are entered by a practice nurse. The program has inbuilt checks which search for defaulters and inaccurate and missed data entry.

Results

JUNE 1980-JUNE 1985

Of the 2959 women aged 20-65, 192 had had a total hysterectomy (table I). Of the women at risk 27 were judged to be inappropriate for screening, 74 women directly refused to attend, and 137 failed to attend despite two letters of invitation from the practice nurse plus a further letter from their doctor. A total of 2356 women (85.1% of the at risk population) had a smear test at least once in the five years. Opportunistic testing in women aged 20-25 resulted in a coverage of 45.8% (146/319). These women were all taking oral contraceptives and were encouraged to have a smear by their pill prescriber. Some women had both a smear and a hysterectomy in this five year period. An abnormal smear result is used throughout to denote any report other than a negative result.

Table II shows the number of women who had an abnormal smear result and those who were subsequently referred and who required treatment. Two women died in these five years. The first woman died of invasive carcinoma of the cervix, stage IIA. Histological examination showed this to be a poorly differentiated squamous cell carcinoma of the cervix. This 53 year old woman had presented with an episode of postmenopausal bleeding, which she had failed to report for eight months. She had had a negative smear test result four years before this episode. The second woman, aged 61, presented with postmenopausal

TABLE I—Target population and number of women having a smear test June 1980-June 1985

Age	No of women registered	No who had had hysterectomy	Target population at risk	Inappropriate for screening	Direct refusal	Failed to attend	No (%) tested in five years
20-24*	319		319				146 (45.8)
25-34	744	13	731	1	16	47	667 (91.2)
35-44	672	57	615	6	8	17	584 (95)
45-54	611	64	547	10	18	29	490 (89.6)
55-65	613	58	555	10	32	44	469 (84.5)
Totals	2959	192	2767	27	74	137	2356 (85.1)

*Women aged 20-25 were tested opportunistically.

TABLE II—Number (percentage) of women with abnormal smear results who were referred to hospital and required treatment

	June 1980-June 1985			July 1985-July 1990		
	Abnormal result	Referred	Treated	Abnormal result	Referred	Treated
20-24	9	5 (56)	3 (33)	40	30 (75)	21 (53)
25-34	39	17 (44)	12 (31)	64	45 (70)	34 (53)
35-44	33	18 (55)	14 (42)	37	22 (59)	19 (51)
45-54	19	8 (42)	7 (37)	21	12 (57)	11 (52)
55-64	7	4 (57)	2 (29)	10	6 (60)	4 (40)
Total	107	52 (49)	38 (36)	172	115 (67)	89 (52)

bleeding three years after a negative smear result. The cervical smear showed endometrial cells and the histology confirmed a well differentiated adenocarcinoma of the endometrium, infiltrating the myometrium of the fundus of the uterus. She died of complications after radiotherapy.

JULY 1985-JULY 1990

Of the 3115 women aged 20-65, 325 had had a hysterectomy (table III). Some women had both a smear test and a hysterectomy in this five year period. Of the at risk population 22 were judged to be inappropriate for screening, 61 directly refused to attend, and 209 failed to attend despite two letters of invitation from the practice nurse plus a further letter from their doctor. In all, 2498 women (89.5% of the at risk population) had a smear test in the five years, including 282 women aged 20-25 (82.5% of the at risk population).

Table II shows the number of women by age group who had an abnormal smear recall, and those subsequently referred to hospital and who required treatment. Six of the 11 women in the age groups 20-34 who were referred to hospital with two mildly abnormal smear results (inflammation, borderline nuclear changes, or atypia or dysplasia) subsequently needed treatment after abnormal cervical biopsy results. In one of these women, whose second smear was reported as showing inflammatory change, histological examination found cervical intraepithelial neoplasia stage II with gland extension. A second woman, whose second smear showed borderline nuclear changes, also had cervical intraepithelial neoplasia stage II diagnosed. A third woman was referred after having two smears showing borderline nuclear changes. Subsequent histological examination showed an adenocarcinoma of the cervix, and she was successfully treated with a cone biopsy. These women justified our policy of referral after two abnormal smears, regardless of the severity of the lesion.

In the age groups 35-65 most women were referred because of a more severe cytological abnormality. Of the two other cases of successfully treated carcinoma of the cervix, one woman presented at the beginning of this five year period with clinical carcinoma of the cervix. She had had a negative smear result (with inflammatory changes) three years previously but had failed to report a postmenopausal bleed which had occurred 18 months previously. The other woman, aged 65, came for a routine recall, having had a normal smear result five years previously.

TABLE III—Target population and number of women having a smear test, July 1985-July 1990

Age	No of women registered	No who had had hysterectomy	Target population at risk	Inappropriate for screening	Direct refusal	Failed to attend	No (%) tested in five years
20-24	342		342	1	2	57	282 (82.5)
25-34	756	10	746	6	6	61	673 (90.2)
35-44	775	67	708	5	7	29	667 (94.2)
45-54	640	116	524	4	14	20	486 (92.7)
55-65	602	132	470	6	32	42	390 (83)
Total	3115	325	2790	22	61	209	2498 (89.5)

One woman died in this five year period from invasive squamous cell carcinoma of the cervix. She was aged 64 and had been invited to attend for a cervical smear on several occasions but had declined.

Discussion

We have completed the audit cycle once. This does not mean that the audit of the smear programme is complete but it shows the benefits to patients that can accrue if audit is consistently applied.

During this audit many new problems surrounding the quality of the care being given to our patients came to light. For example, the changes in referral and patient communication policy generated some anxiety among women who had an abnormal smear result. This was reflected in women making appointments to see their doctor to discuss the significance of an abnormal smear result or a hospital referral. To help these women the practice prepared literature which explained the term "abnormal smear" and gave a glossary of terms they might subsequently encounter (colposcopy, cryotherapy, etc). This literature was offered to any woman expressing anxiety at a routine smear appointment. The practice nurse offered appointments to explore anxieties and explain terminology and procedures. The programme has required many changes since its inception and has entailed many hours of discussion between the partners and the practice nurse. The cervical smear protocol is now reviewed every two years.

As in any effective screening programme coordination and communication are vital, and although the ultimate responsibility lies with the doctor, the responsibility for running the screening programme (administration and taking smears) has been delegated to a practice nurse (AME), working closely with one partner. The success of this nurse run clinic is in line with the experience of others.⁷

The programme has attempted to raise women's awareness about the nature of a cervical smear test, to reduce their anxiety during the taking of the smear, and always to inform them of their cervical smear result. We believe that this programme, implemented and based in general practice, is more effective than a district health authority call and recall programme. It is certainly more easily audited, more personal, and more sensitive to women's needs.

CYTOPATHOLOGICAL CLASSIFICATION

The cytopathological and histological reporting of cervical smear abnormalities have changed during the past 10 years. During 1980-5 the terms atypia (mild, moderate, or severe) and dysplasia were used in cytological reporting and carcinoma in situ was the histological term used to indicate changes affecting the full thickness of cervical epithelium without invasion of local structures. In 1986 the term cellular intraepithelial neoplasia was introduced to indicate cell changes restricted to the epithelium.⁶ The new classification is more descriptive of the cell changes seen by the cytologist. It is not possible accurately to substitute terms used in the two periods of this audit. The increased number of abnormal smears noted in the second audit may be due either to an increased incidence of cellular intraepithelial neoplasia or to the different way of reporting abnormalities.

EFFECTS OF CHANGING POLICY

The decision to invite women aged 20-25 by letter, resulted in an increase, from 45.8% to 82.5% of that age group, having a smear test. No firm conclusions can be drawn from the increase in abnormal smear results in this age group because of the different numbers of women smeared.

The number of abnormal smear results increased from 39 to 64 in women aged 25-34. We also noted that the percentage of women with abnormal smear results who were subsequently treated in the second five year period was higher in all age groups than during the first five year period.

IMPLICATIONS

Our results have important implications relating to the government policy to remunerate general practitioners for screening performed at five yearly intervals. This policy means that most women in the United Kingdom have a smear test once every five years, as performing smears more often than this conveys a financial disadvantage to general practitioners. Twenty six women in the age group 25-34 who had developed cytological changes reported as cellular intraepithelial neoplasia I, II, or III had had a negative smear result in the preceding three years. This suggests a progression from normal to abnormal cytology in less than five years.

Hospital investigation and care of women with cytological abnormalities is likely to increase as more practices achieve the higher targets in cervical screening. Planning for the provision of this care would benefit from accumulated general practice data provided by audits such as ours. Family health services authorities should facilitate the aggregation of data which are currently held on diverse computer systems

in neighbouring practices and should make them available to the health authority managers and doctors planning and providing secondary care. It has been proposed that the managerial systems of primary and secondary health care be integrated.⁸ If the model suggested here was adopted, with primary care measuring the health needs of the population and secondary care being developed to respond to those needs the health service would move to being a patient centred service.

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MATERIA NON MEDICA

The G stands for Gladstone

"You must be mad to subject yourselves to this ordeal. I wouldn't do it." William G Stewart, producer and presenter of Channel 4's quiz programme *Fifteen to One* addressing contestants before a recording. By that time I was ready to agree with him. So why did I enter?

My premature retirement from medical practice six years ago was followed by several (painfully) close encounters with eminent surgeons. Just when the surgeons had decided that I was going to survive in spite of their efforts, routine examination revealed diabetes. Having finally got that under control I decided to see if the little grey cells would still function under pressure. I auditioned for *Fifteen to One*, was accepted, and so found myself in a television studio in Wandsworth doing what everyone does in a television studio—hanging around waiting for something to happen.

Even when we were called to the studio the waiting was not over. There were sound checks, lighting checks, camera checks, and makeup checks—and the recording of the opening titles, which took as long as the rest of the programme. Finally, into action. I achieved my first ambition of surviving round one, had an easy passage in round two, and to my surprise reached round three. In no time at all I was left as the winner with enough points to reach the grand final. I was on course for a record score when to my annoyance I failed on two easy questions. I knew the answers but could not recall them quickly enough.

The grand final is a particularly sadistic event reserved for the heat winners with the 15 highest scores. The waiting was even worse than in the heat. Two hours stretched to three, then to four. My hopes sank when I drew position 15 in the line up, and I was not surprised to be eliminated rapidly. I felt nervous and unsettled,

concentration was difficult, and I failed to answer probably the easiest question in the whole programme.

When you watch the programme at home the questions all seem easy, but things are very different in the studio. Concentration (or lack of it) is a great problem, particularly after the long wait. Questions can be about any subject, and each requires a rapid refocusing of the mind. A sequence of moderately difficult ones can be punctuated by silly ones such as "What colour is Trafalgar Square on a Monopoly board?" The questions on any one subject are not difficult for a specialist in that subject, but you have to be prepared to answer questions on all subjects. Inevitably, Murphy's Law applies, and the next person along gets the question you wanted. And the easy ones catch you out just as much as the difficult ones. This is where age becomes a disadvantage—the knowledge is there, but recall becomes slower.

So what, if anything, have I proved? "That a disability need not be a handicap" sounds pretentious. I hoped to give a reasonable performance, and in the end did better than expected. Competing against fit people half my age I reached the last 15 out of 900 contestants. Looking back at the disastrous grand final I wonder if my blood sugar was low—I certainly felt very hungry after the recording.

As a heat winner I shall be invited to take part in the next series. Shall I accept? Is it worth the hassle? Who, when asked why he climbed Everest, replied, "Because it was there"? And who said "I shall return"? Next time I must take more care of my blood sugar. Then, of course, there is *Countdown*...

Still wondering about the title? A reply by Bill Stewart—work out the question for yourself. If you didn't need this clue you could be a potential contestant.—RONALD SCHOFIELD, retired community physician, Bridlington