practices have only explained about 30-40% of this variation.[4 5] Hence, a capitation based formula would be difficult to use at practice level. Despite the problems outlined above, health authorities need to move from practice budgets based on historical spending to budgets based on the need for care of practice populations.[9] Health authorities are making some progress in this area, but it may be several years before substantial progress is made.[10]

In the interim, what can be done to improve the process of setting budgets for general practices? Firstly, general practitioners should be better informed about how budgets are set, and, to facilitate this, health authorities should publish the criteria they use to set budgets. Secondly, information on budgets for fundholding and prescribing should be included in the primary care indicator packages that health authorities are developing.[11] This would allow general practitioners to compare the budgets of their own practices with those of other local practices. Thirdly, health authorities should use weighted capitation as a guide to setting practice budgets and not as the ultimate determinant of these budgets. Rigid, inflexible application of weighted capitation may lead to practices becoming reluctant to register patients who need high cost care.[12] For the foreseeable future, therefore, there will continue to be some subjectivity in allocating budgets to general practices, and hence budget setting will remain an area that will generate controversy and debate.

AZEEM MAJEED
Senior lecturer in general practice
Division of General Practice and Primary Care,
St George's Hospital Medical School,
London SW17 0RE

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Cervical sampling devices

Extended tip spatulas (such as the Aylesbury) should replace the Ayre

See p 1285

In 1994-5, 4.5 million cervical smears were examined in England; over 350 000 (7.9%) were deemed inadequate.[1] Inadequacy rates reported by the 183 laboratories ranged from 0.2-35.5%. Such variation is unacceptable and must in part reflect different reporting criteria. Guidelines that should lead to a greater uniformity in reporting have since been circulated.[2] The rates also depend, however, on the quality of smear taking, and there is room for improvement here too.

In this week's *BMJ*, Buntinx and Brouwers (p 1285) review the relation between sampling devices and detection of dyskaryosis.[3] The data suggest that extended tip spatulas (such as the Aylesbury) should be used in preference to Ayre spatulas and that brushes may be beneficial when used in conjunction with spatulas but that they should not be used alone. Here I will consider the appropriateness of combining results from studies with very different designs and the appropriateness of the endpoints used to evaluate screening.

The ideal sampling device would maximise the amount of cervical cancer prevented while minimising the costs of screening. No randomised study has evaluated prevention of cervical cancer directly; all have relied on surrogate endpoints. The best surrogate is perhaps the number of women treated for (histologically confirmed) high grade cervical intraepithelial neoplasia. Even this imperfect endpoint is not available in most studies; instead they rely on the rates of cytological abnormalities detected. A device associated with a higher rate of dyskaryosis would be judged to be superior, even if it were no better at cancer prevention, despite the costs (financial and psychosocial) of additional referrals. A good surrogate endpoint must be an accurate predictor of cancer prevention. Additionally, the chances of preventing cancer given the surrogate should be the same for all sampling devices in the study.[4] Suppose one sampling device picked up additional cases of mild dyskaryosis based on cells sampled some distance from the transformation zone. If such cases were less frequently associated with progressive disease, the surrogate would be inappropriate.

Dey *et al* recently argued that inadequacy rates could be used as a surrogate for smear quality and that smear quality may be more appropriate than dyskaryosis for assessing cancer prevention.[5] Although reducing the number of repeat smears would have clear cost benefits, one must be careful not to overinterpret the clinical importance of a reduced inadequacy rate. Mitchell and Medley showed that the incidence of cervical intraepithelial neoplasia in 20 000 women with a previous negative smear was not significantly different in those whose initial smear did or did not lack an endocervical component.[6] It is now accepted that a report of "inadequate" should not depend solely on the presence or absence of endocervical cells, but it is still doubtful whether inadequacy rates can be considered a surrogate for screening efficacy.

The rates of dyskaryosis in Buntinx and Brouwers' paper range from under 1% in a screening setting to over 85% in a study of women referred with abnormal cytology.[3] Combining relative risks from settings with such diverse underlying rates is hardly meaningful—a relative risk of 2 is impossible when the baseline is 80%. The use of odds ratios, while still problematic, seems more appropriate (table). The sampling device most suitable for routine screening may not be optimal for women who have been previously treated for cervical intraepithelial neoplasia. Data from the overview suggest that, whereas there is little advantage from using a brush in addition to a spatula in routine screening, the benefit in women referred with a previous abnormal smear may be more substantial (table).

Registrations of adenocarcinoma of the cervix have increased substantially in both Britain and the United States,[7] and there is concern that cytological screening is less effective in preventing adenocarcinomas. Whereas the transformation zone must be adequately sampled for identification of precancerous squamous lesions, adenocarcinomas are likely to originate further up the endocervical canal. Thus there should be particular interest in the ability of sampling devices to pick up glandular lesions.

Testing for human papillomavirus is thought to be less reliant on adequate sampling of cervical cells, but as long as screening is based on cytology it is important for smears to be taken by trained practitioners using an appropriate device (such as an extended tip spatula), supplemented by a brush

Table—*Odds ratio for various sampling devices for detecting mild dyskaryosis or worse relative to extended tip spatula alone. Odds ratios have been calculated by pooling all studies and adjusting for underlying rate in each study.*

	All studies		Screening only		Referral only	
	No of smears taken	Odds ratio (95% confidence interval)	No of smears taken	Odds ratio (95% confidence)	No of smears taken	Odds ratio (95% confidence)
Extended tip	27 939	1.00	11 302	1.00	905	1.00
Ayre	14 329	0.87 (0.79 to 0.96)	1232	0.49 (0.24 to 1.01)	1039	0.92 (0.69 to 1.23)
Ayre plus*	11 459	1.09 (0.97 to 1.23)	7373	0.57 (0.26 to 1.29)	911	1.63 (1.24 to 2.15)
Extended tip plus*	12 023	1.08 (0.95 to 1.22)	7342	1.14 (0.77 to 1.69)	954	1.77 (1.27 to 2.46)
Brush or swab	2302	0.75 (0.62 to 0.90)	1050	0.32 (0.15 to 0.70)	1252	1.04 (0.79 to 1.36)
Cervex	10 054	1.05 (0.96 to 1.16)	3381	1.00 (0.62 to 1.61)	280	1.37 (0.87 to 2.14)
Cytopick	3406	1.08 (0.68 to 1.73)	3406	1.10 (0.66 to 1.82)	0	—
Bayne	4320	1.12 (0.80 to 1.57)	4320	0.59 (0.25 to 1.40)	0	—

*Cytobrush or cotton swab.
Note that some studies had a mixture of screening referral smears or were conducted in gynaecology clinics and have only been included as "all studies."

whenever the transformation zone is not visible. "The most important variable is probably the operator's skill."[8] Screening programmes should monitor the inadequacy rates of smear takers, and anyone with a particularly high rate relative to that of the local laboratory should be offered retraining. Cervical screening in Britain has improved considerably since 1988, and it is probably preventing some 2000 cases of invasive cancer each year.[9] Much can still be done to improve the quality of smears. It is hoped that Buntinx and Brouwers' paper will lead to the universal replacement of the Ayre spatula.

PETER SASIENI
Research scientist

Department of Mathematics, Statistics and Epidemiology,
Imperial Cancer Research Fund,
London WC2A 3PX

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Home birth

Safe in selected women, and with adequate infrastructure and support

See pp 1302, 1306, 1309, 1315

Birth is an event of great importance in family life. Although pregnancy and delivery are, under healthy conditions, normal social and physiological processes, childbirth has become hospital centred in most industrialised countries. The assumption is that hospital based deliveries are safer for mother and child. Yet the Cumberlege report sees home birth as a real option,[1] and the wishes of women to have home births must be viewed in that light. A randomised controlled trial would help to resolve the controversy over the relative safety of home and hospital birth,[2] but conditions for a "fair" trial are difficult to achieve. Such a study would require large numbers because of the low frequency of adverse events, and the necessary environment of experienced home deliveries has virtually disappeared. In the absence of a randomised trial, observational studies are welcome, and this week's *BMJ* carries four papers reporting on the safety, professional support, and patient satisfaction of home births.[3-6]

The first of these, from the Northern region's perinatal mortality survey, reports 134 perinatal losses in 3466 births outside the hospital,[3] about four times the number of losses in hospital births. At first sight this seems to endorse the view that hospital is the safest place to deliver. But 97% (131) of these perinatal deaths at home were recorded in women who were actually booked for a hospital delivery or had no prearranged plan for delivery. The perinatal outcome in planned home births was better than for all women giving birth in the region—a result in line with Swiss and Dutch findings also reported in this week's *BMJ*.[4,5] This supports the safety of home birth provided it is offered to women at low risk of obstetric complications. Most perinatal deaths occur in women with health or obstetric problems that existed before or developed during pregnancy, and these women can be identified and referred before the onset of labour.

Assessing a woman's risk and providing appropriate care is bread and butter to general practitioners. The key to the consistently good results of home births in Dutch primary care settings[5,7] is meticulous selection of women at low risk of obstetric complications. This results in equal or better obstetric outcome compared with hospital birth, and fewer interventions, for a large number of women in the community.[7] Risk assessment is based on a protocol for referral[8] (the Kloostermanlist, named after its designer), which is used routinely in the community[7] and serves as the national reference of good practice.

Promotion of home birth is not restricted to Europe: there have also been initiatives in the United States and Australia.[9,10] In our view such initiatives should be integrated in comprehensive primary care, as the roles of general practitioner and midwife are not limited to the place of birth—they cover the whole of pregnancy, delivery, and neonatal care.[7] However, some primary care practitioners may need to be persuaded to provide the option to their patients: the survey from Britain's Northern region found that general practition-