

contract period, HIV infection might increase mortality attributable to working in developing countries by one third.

Traffic accidents were also an important cause of death for Peace Corps Volunteers⁴ and American missionaries.⁵ Among missionaries, however, the overall standardised mortality ratio was 0.5 because of a strongly reduced mortality from other causes of death. In particular, mortality attributable to cardiovascular diseases was much reduced, which was explained by a healthy cohort effect, better diet, and more physical exercise. In the relatively young Dutch expatriates cardiovascular diseases were not an important cause of death and the mean duration of contract is too short to expect major benefits from a change of lifestyle.

Efforts to reduce excess mortality among expatriates should be undertaken. In particular, development organisations and workers should explore measures to reduce the risk of traffic accidents and of HIV infection. Additional studies are needed on the health

risks to expatriate workers and their families. Major areas not covered by the present study are mortality after return, mortality in children, and morbidity.

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Routine surgical follow up: do surgeons agree?

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The move to primary care led purchasing in the NHS¹ is focusing attention on the role of outpatient review, especially for postoperative patients. General practitioners have questioned whether such routine reviews could be reduced, describing them as of limited clinical value and a waste of patients' time.² Some surgeons agree, noting that most patients' postoperative problems are identified by general practitioners before their appointment.³ The limited evidence available suggests that there are indeed opportunities for change. A randomised controlled trial comparing postoperative follow up in outpatient clinics and general practice found no difference in readmission rates or mortality, and patients were equally satisfied with either method.⁴ The general practice option was, however, cheaper for both the patient and the health service and resulted in a minimal increase in general practitioner workload.

Despite this apparent consensus in published reports, a major shift to primary care does not seem to have occurred and the advocates of change may be unrepresentative of their colleagues. We therefore

surveyed a sample of British consultant surgeons on their views about routine postoperative follow up for common surgical conditions.

Subjects, methods, and results

A questionnaire was sent to 100 consultant surgeons selected at random from a database containing details of all consultant general surgeons employed in the NHS (CAM Data Services). Twelve of the most common routine surgical operations were selected and respondents were invited to indicate the percentage of patients that they would normally offer an outpatient follow up appointment to. For those patients who were seen postoperatively we also asked the length of the follow up period and the number of times the patients would be seen within this period. Following a reminder, the response rate was 75%. Of the 75 respondents, 18 were from teaching and 57 from district general hospitals. Responders did not differ from non-responders in either type of hospital ($\chi^2=0.75$, 1 df, $P=0.38$) or years since qualification (Mann-Whitney U test, $z=1.4547$, $P=0.146$). When follow up was described as indefinite a figure of 20 years was assumed for statistical analysis.

The results are shown in the table. These show widespread variation in the extent to which surgeons normally offer follow up appointments for many common conditions. For most procedures the distribution of responses was bimodal, with some surgeons offering appointments to all patients and others to none. For some of the commonest procedures, such as inguinal hernia repair, the numbers of surgeons advocating follow up or discharge were evenly split. Once the decision to offer an appointment had been made there was less variation in the proposed length of follow up and number of visits. There was no significant difference in the percentage of patients followed up for any procedure between teaching and district general hospital consultants. In comments on the questionnaires some surgeons said they thought issues such as the threat of litigation and patient satisfaction influenced their decisions.

Comment

Floreys *et al* suggested that some postoperative follow up presently conducted in hospitals could be transferred to primary care and that such a move was supported by some surgeons.⁴ Indeed, others have questioned the value of routine follow up even in some

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Numbers and percentages of surgeons who routinely follow up nearly all or virtually none of their patients after 12 routine operations

	% Of surgeons who advocated routine follow up rates of		Median total follow up time in months* (interquartile range)	Median No of times seen* (interquartile range)
	>95% of patients	<5% of patients		
Skin lesions removed under local anaesthetic	15 (11/71)	51 (35/71)	1.5(1-2)	0(0-1)
Appendectomy	30 (22/74)	45(33/74)	1.5(1-2)	1(1-1)
Inguinal hernia repair	43 (32/74)	43 (32/74)	2(1-2)	1(0-1)
Varicose vein procedure	47 (32/68)	29 (20/68)	1.5(1-2)	1(0-1)
Lateral anal sphincterotomy	71 (42/59)	22 (13/59)	1.5(1-2)	1(0-1)
Breast lumpectomy (benign)	72 (43/60)	10 (6/60)	1(1-1.5)	1(0-1)
Cholecystectomy	76 (54/71)	15 (11/71)	1.5(1-2)	1(1-1)
Haemorrhoidectomy	86 (56/65)	8 (5/65)	1.5(1-2)	1(1-1)
Perforated peptic ulcer	87 (62/71)	6 (4/71)	2(1.5-3)	1(1-2)
Partial or total thyroidectomy	100 (56/56)	0	3(1.8-12)	1(0-2)
Wide excision or mastectomy for breast cancer	98 (59/60)	0	120(60-240)	12.5(7.5-40)
Colectomy for carcinoma	100 (68/68)	0	60(60-240)	10(4.7-20)

*For those patients followed as outpatients.

cases where there was unanimity among our sample.^{5,6} If such a change is to occur, however, we need a better understanding of the reasons why different surgeons take such divergent views and whether their perceptions coincide with those of patients and general practitioners. These topics are the subjects of a follow up study.

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Increased risk of diarrhoea caused by *Clostridium difficile* in elderly patients receiving cefotaxime

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Clostridium difficile is a Gram positive anaerobic spore forming bacillus whose pathogenicity is related to exotoxin production in the large bowel. This may result in disease ranging from trivial diarrhoea to life threatening pseudomembranous colitis. Between 1982 and 1993 there was a 15-fold national increase in reported *C difficile* infections that was most marked in patients aged over 65.¹ *C difficile* diarrhoea is almost exclusively acquired in hospital and strongly associated with the use of broad spectrum antibiotics.¹ In 1993 the British Thoracic Society recommended cefotaxime and cefuroxime as first line antibiotics for treating severe community acquired pneumonia of unknown cause in adults.² As a result the use of cefotaxime increased 20-fold in our unit. After November 1993 we also saw an unexpected increase in the incidence of *C difficile* diarrhoea, and we therefore sought to determine whether the two events were related.

Subjects, methods, and results

The geriatric unit at Hammersmith Hospital has 46 beds. We reviewed the clinical notes of all our patients with *C difficile* diarrhoea from April 1993 to November 1994. *C difficile* diarrhoea was defined as the passing of unformed stools in which *C difficile* toxin A was detected using a commercial enzyme immunoassay (Meridian Diagnostics Inc). In the case of a relapse only the first episode was counted. Affected patients were isolated or nursed together in a bay of the ward. "Notional courses" were used to estimate the total number of courses of each antibiotic (a seven day course of the most commonly prescribed dose regimen).³

From 1 April 1993 to 30 November 1994 1037 patients aged over 65 (median 83.8 years) were admitted; 43 (15 men) developed *C difficile* diarrhoea after antibiotic treatment. The average length of stay for these patients was 62 days, compared with 21 days for the whole group. Relapse of *C difficile* diarrhoea occurred in 11 of the 43 patients, and 18 (42%) died during their hospital admission; overall mortality in the unit was 25%. Two of the 43 patients were readmitted; data from the second admission were excluded from the results.

The monthly incidence of new cases of *C difficile* diarrhoea seemed to be strongly related to monthly expenditure on cefotaxime (figure). Expenditure on other antibiotics did not have such clear temporal

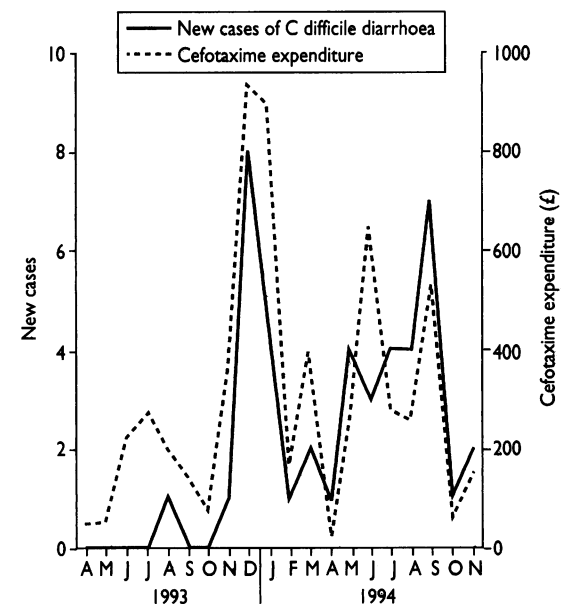
relation. Moreover, the highest relative risk for developing diarrhoea among patients receiving an antibiotic compared with those not receiving it occurred with cefotaxime (7.2, 95% confidence interval 3.9 to 13.2), followed by cefuroxime (5.2 (2.9 to 9.45)), and erythromycin (2.8 (1.5 to 5.2)). No significant increased risk occurred with other antibiotics. Although many patients received combination therapy the data were not available to study the potential interaction between different agents.

Comment

A sudden increase in the incidence of *C difficile* diarrhoea followed a 20-fold increase in the use of cefotaxime. Infection control measures did not succeed in preventing new cases, which only decreased when the use of cefotaxime was stopped (figure). Nearly one in five patients who received cefotaxime developed *C difficile* diarrhoea.

Risk factors for the development of *C difficile* diarrhoea include increasing age; hospitalisation; malignancy; renal impairment; use of antibiotics, nasogastric feeding, laxatives, H₂ antagonists; and general disability. Many of these existed in our patients, but we could not firmly assess their risk ratios in our retrospective analysis.

C difficile diarrhoea has been reported following the administration of cefotaxime,⁴ but we are not aware of any report of such a rapid increase in cases related to its introduction. Another recent study did, however, show a similar relation with another broad spectrum antibiotic, clindamycin.⁵ We suggest cefotaxime should be used in elderly patients only if there is no suitable alternative.



Relation between use of cefotaxime (as measured by expenditure) and new cases of *C difficile* diarrhoea, April 1993 to November 1994