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## *Clostridium difficile* after antibiotic therapy

Sir,

The isolation of *Clostridium difficile* or detection of its toxin is a well recognized association with diarrhoea in hospital patients, where it accounts for 10–15% of cases of diarrhoea associated with antibiotic treatment.<sup>1</sup> In contrast, *C difficile* has only rarely been reported as a cause of diarrhoeal illness in general practice although, given the ubiquity of both the causative bacteria and antibiotic therapy, there is no reason to think it should not also occur.<sup>2</sup>

The results of all stool samples sent by general practitioners to the Department of Medical Microbiology, Southmead Hospital, Bristol, between August 1992 and April 1993 were reviewed. There were eight patients from whom samples had been sent by general practitioners and in which *C difficile* toxin was identified using the Premier Kit® (Meridan Diagnostics).

Seven of the patients were women and they were aged between 29 and 56 years; the man was aged 79 years. All had recently received a beta lactam antibiotic for a community-acquired infection: (chest infection (five cases), pelvic infection (one), urinary tract infection (one) and sinusitis (one)). Three had received co-amoxiclav, two ampicillin, two cefixime and one amoxicillin. All had diarrhoea, most commonly occurring within one week after stopping antibiotic therapy but in one case a diagnosis was not made until 42 days later. All recovered from their diarrhoea after being treated with oral metronidazole 400 mg three times a day for 7–10 days.

Data from the Avon family health services authority for the period August 1992 to April 1993 showed that amoxicillin was the most commonly prescribed antimicrobial locally (R Grant, personal communication). There were 42 970 prescriptions for amoxicillin (33.7% of all antibiotics), 13 749 for co-amoxiclav (10.8%) and cefixime accounted for 0.5% of prescriptions.

The cases presented here illustrate what must be a common problem in general

practice. Despite the fact that *C difficile* is a well-known hospital pathogen we have found only one published report of its association with diarrhoea in the community.<sup>2</sup> While most cases of *C difficile* diarrhoea are mild or moderate, for a proportion of hospital patients infection may lead to more severe outcomes such as bowel perforation or gram-negative shock. Diarrhoea due to *C difficile* has no particular clinical features and presents like many other enteric pathogens with the exception of a history of antimicrobial use within the previous two months.

Beta lactam antibiotics, which disturb the normal bowel flora, were commonly associated with infection in the patients studied here, as has been described in hospital patients.<sup>3</sup> Both co-amoxiclav and cefixime were more likely to be associated with *C difficile* diarrhoea than would be expected from the numbers of prescriptions for these agents.

Patients who have diarrhoea and who have recently received antibiotic therapy should have stool samples sent to a microbiology laboratory and a history of antibiotic use should be indicated, or a *C difficile* toxin test specifically requested.

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## Unemployment and prescribing

Sir,

The possibility of using unemployment

rates to explain or predict prescribing by general practitioners appears at first sight to be attractive, and the case is argued by Pringle and Morton-Jones (February *Journal*, p.53). We are concerned that their paper contains several unsupported assertions and ignores important issues.

The authors say that 'high prescribing levels suggest high workload', but measure prescribing in terms of cost per patient. Patients are not the most suitable denominator and cost is an unreliable numerator — two doctors prescribing for the same population do not necessarily use equally expensive drugs. The other two measures used — items per patient and net ingredient cost per item — are poor for another reason: the duration of a prescription affects both, and in opposite directions. This is especially important for repeat prescribing (estimated by the National Audit Office<sup>1</sup> to account for two thirds of costs) where each general practitioner is likely to use a consistent duration which may be different to that used by other general practitioners.

They also assert that the strong link between unemployment and prescribing costs per patient for all patients (not just those unemployed) suggests that unemployment has an effect on the population as a whole. While it has been shown<sup>2</sup> that unemployment, and more particularly the threat of unemployment, affects the health of individuals, we must be wary of oversimplistic interpretations. In the past it may have been reasonable to use unemployment in an area as a marker for poor standards of housing and education, industrial pollution and low income; more recently, and since the year of the study (1989), the increased element of white-collar unemployment makes the assumption open to question.

We agree with the authors in preferring Office of Population Censuses and Surveys estimates of family health services authority populations to numbers of registered patients as a way of avoiding the problem of list inflation, but they should not have ignored the age and sex structure of the population. They could have incorporated prescribing units (PUs), where patients aged over 65 years have a weighting three times that of younger