Correspondence

Prevention of infective endocarditis

Sir,

Having been involved in trying to arrange a widely, even internationally, agreed schedule of prophylaxis, we read your Editorial[1] and the abstract of Dr Oakley and others[2] with considerable interest.

We[3] have already agreed that amoxycillin may be a good answer to the dental problem but we feel it is still premature to give it unqualified approval as the definitive prophylaxis when given in a single dose before the following points have been elucidated:–

(1) In the study by Oakley *et al.*, amoxycillin was by no means 100% effective.

(2) L forms or persisters were not looked for in blood and have not yet to our knowledge been studied in the laboratory. All penicillins take at least three days to "sterilise" a culture of sensitive bacteria.

(3) The rabbit experimental model has not been used to test this regimen. All other regimens have been assessed by this valuable method and incidentally a single dose of benzylpenicillin failed to work in this test.[4] McGowan of Glasgow and others are at present setting up a study of amoxycillin and the results are awaited with interest.

The suggestion that amoxycillin should be given to *all* people undergoing dental extraction presents a new departure in medicine. Never before, to our knowledge, has a drug been advised to cover a very common procedure which is predominately carried out in normal people and whose use would be of possible benefit to a tiny minority. Figures for the dangers, the shortfalls, and the cost of this should be available before any general recommendations are made.

While some hopeful data exist for amoxycillin, the evidence for a *single dose* of erythromycin as an alternative appears to have no supporting evidence. If this drug is used, surely it must be given for two to three days.

Finally, we know from our own experience that much prejudice and entrenched medical opinion already exist in this difficult field. Any premature new recommendations could lead to the compounding of this situation rather than its improvement. We therefore recommend a pause while the above matters are sorted out, before the suggested changes are generally accepted.

We have reviewed the wider problems of prophylaxis elsewhere.[3]

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References

1 Oakley C, Somerville W. Prevention of infective endocarditis. *Br Heart J* 1981; **45**: 233–5.
2 Oakley CM, Perez G, Darrell JA. Single dose oral amoxycillin for prophylaxis of bacteraemia associated with dental surgery (abstract). *Br Heart J* 1981; **45**: 343.
3 Fleming HA, Newsom SWB. The prevention and treatment of infective endocarditis. In: Yu PN, Goodwin JF, eds. *Progress in cardiology*. **9**. Philadelphia: Lea & Febiger, 1980: 80.
4 Pelletier LL Jr, Durrack DT, Petersdorf RG. Chemotherapy of experimental streptococcal endocarditis. IV Further observations on prophylaxis. *J Clin Invest* 1975; **56**: 319–30.

This letter was shown to Drs Oakley, Somerville, and Darrell who reply as follows:

Sir,

Drs Fleming and Newsom say the "amoxycillin was by no means 100% effective" presumably because two second subcultures grew organisms. Effective prevention of bacterial endocarditis does not depend on killing every single organism. Bacteraemia occurs frequently as we know and especially from the mouth. We are concerned in preventing predictable high grade bacteraemia and in this amoxycillin was effective. No primary cultures were positive.

L forms (spheroplasts or cell wall defective forms) do not emerge except in chronic infections treated with long term penicillin and are irrelevant in this context.

Drs Fleming and Newsom return again to the rabbit model. We repeat that only nine hours of bactericidal activity were required to cure the rabbits. While a single dose of benzyl penicillin failed, a single dose of 3 g amoxycillin provides 10 hours or more of the bactericidal activity required to cure the rabbit model.

It is clear that many writers on the subject do not understand the underlying principle of a prophylactic regimen against infective endocarditis. The intention is not to sterilise the source of bacteraemia, in this case the mouth, but simply to ensure a high bactericidal level in the bloodstream at the time when the main bulk of oral organisms are liberated into the bloodstream by dental extraction. Such bacteraemias are known to be transient. On this basis a high single dose of erythromycin is backed by the same logic that applies to amoxycillin though admittedly erythromycin is not as effective an antibiotic. No advantage is gained by prolonging the treatment to two or three days and failure to give the initial high dose misses the point altogether.

We really feel that much of the problem about achieving effective dental prophylaxis has to do with a lack of understanding of what is needed. We believe that dental procedures are only one of a number of different causative factors in viridans endocarditis and that previous dental work is irrelevant in the majority of cases. This is not, however, what Dr Fleming and Dr Newsom are apparently concerned about. As they know, however, we have initiated a study with the British Cardiac Society under the auspices of the Medical Services Study Group of the Royal College of Physicians, and we hope that our colleagues' collaboration in this study will do much to sort out both the relation between dental procedures and streptococcal endocarditis and the efficacy of prophylactic regimens currently being used. Until the results of this study are known we believe that a simple, safe, and effective prophylactic regimen should be made available to dentists and their patients. Amoxycillin is as "effective" as the regimen recommended by the American Heart Association four years ago and not a poor man's substitute. Furthermore, it has the advantage of being easy to take and therefore likely to be given. Intramuscular regimens simply do not work – because they are impractical they are just not given. We use the word "effective" here to mean a drug of known bactericidal quality given in a dose which is known to provide bactericidal levels for sufficiently long to satisfy even those who quote the rabbit model.

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Notice

Subacute bacterial endocarditis

A survey is currently being carried out by the British Cardiac Society and the Medical Services Study Group of the Royal College of Physicians. Though improvement of dental prophylaxis is the prime objective, the survey is already yielding other valuable information. It is hoped that proformas will be received in respect of a high proportion of patients with subacute bacterial endocarditis in the British Isles seen during 1981 and 1982 and readers are asked to arrange for them to be submitted in respect of any cases that come to their notice. Proformas can be obtained from Sir Cyril Clarke, Medical Services Study Group, King's Fund Centre, 126 Albert Street, London NW1 7NF (tel. 01 267 6111, ext. 263) to whom they should be returned.