letters
TO THE EDITOR

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Prophylaxis and treatment of infective endocarditis in adults: a concise guide

Editor – I strongly object to the recommendations on prophylaxis given by the British Cardiac Society and listed in the accompanying editorial (*Clin Med* November/December 2004 pp 489–90; *Clin Med* November/December 2004 pp 545–50). They are not evidence based, a number of the indications are based on single case reports and the authors have omitted other relevant papers in this area. It is interesting that a number of these indications were not thought worthy of prophylaxis by either the European or American guidelines.[1,2]

The papers cited do not support the recommendations; for example, the circumcision paper refers to a letter whose conclusions were 'that routine use of bacterial endocarditis prophylaxis prior to circumcision to all newborn with congenital heart defects would result in extreme overuse of antibiotics'.[3] The risk of bacteraemia following circumcision calculated from an earlier paper was recorded as 0.008%. The risk of anaphylaxis with penicillin is said to be between 0.005–0.05%.

Similarly, dermatological procedures are listed, as are practices involving non-medical practitioners such as acupuncture and tattooing. I am not sure how the authors would envisage antibiotic prophylaxis being given outside the healthcare setting. Furthermore, the evidence for this is not great either, and again the reference given by the authors appears to contradict their conclusions. Flanagan and Carmichael took blood cultures from 150 patients and found only one positive blood culture. Even this could have been a contaminant, as it was in one bottle of a two bottle set (bacteraemia figure given as 0.7%, confidence intervals 0.03–3.3%).[4] They also pointed out that 70% of the coagulase-negative staphylococci isolated at their hospital were flucloxacillin-resistant and therefore vancomycin or teicoplanin would have to be used as prophylaxis.

Antibiotic prophylaxis for endocarditis should be based on the risk of a significant bacteraemia at the time of the procedure. Certain practices (such as body piercing or acupuncture) may result in an increase risk of local skin or soft tissue infection; these should be avoided in patients at risk of endocarditis. Wound infections may occur some time after these practices are performed and these should be treated promptly.

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In response

Editor – The British Cardiac Society's recommendations on antibiotic prophylaxis for the prevention of infective endocarditis[1] are not dissimilar to those published by the American Heart Association[2] and the European Society of Cardiology,[3] although some small differences do exist.

However, to say that published case reports associating infective endocarditis with bacteraemia-inducing procedures do not constitute 'evidence' is peculiar in our view. For certain procedures, eg circumcision, tattooing and body piercing, there is no possibility of randomised trials to firmly establish the relationship incontrovertibly and conclusions have to be based on the circumstantial evidence of case reports or case series and knowledge of the pathophysiology of infective endocarditis.

Circumcision is a procedure that may result in significant bacteraemia[4] and in those patients with moderate or high-risk cardiac lesions this may result in infective endocarditis. To say that not enough case reports have been published to make the recommendations for antibiotic prophylaxis for such cases 'evidence-based' and hence unnecessary is not sensible, especially when one considers the devastating consequences of infective endocarditis that result in persistently high morbidity and mortality, despite modern treatment strategies.

With regard to the dermatological procedure of tattooing, this has also been clearly been shown to cause infective endocarditis in patients at risk because of a cardiac lesion. It is not merely a theoretical issue. The unfortunate patient reported by Satchithananda *et al* developed severe aortic destruction and other complications following body tattooing,[5] and required a hospital stay of more than two months and powerful parenteral antibiotics as well as oral rifampicin for the S*taphylococcus aureus* infection. It is important that physicians and their patients with cardiac disease are fully aware of the potential complications related to tattooing, body piercing and acupuncture so that individuals can avoid unnecessary bacteraemia and the risk (albeit small) of developing infective endocarditis. We would strongly advise patients with moderate or high-risk cardiac lesions not to entertain these pro-

cedures and the practitioners of these 'arts' should accept legal responsibility for their actions.

Finally, attempting to guess the absolute degree of risk involved for particular procedures is not helpful and is likely to be inaccurate and misleading. Wherever practical, procedures known to be associated with bacteraemia or reported to be associated with the development of infective endocarditis (presumably as a consequence of bacteraemia) should be avoided in patients considered at moderate or high risk of infective endocarditis unless the individual receives appropriate antibiotic prophylaxis prior to the procedure.

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Editor – The new guidelines on endocarditis prophylaxis from the British Cardiac Society summarised by Ramsdale and colleagues (*Clin Med* November/December 2004 pp 545–50), if implemented widely, would mandate a very significant increase in the number of 'moderate-risk' patients receiving broad spectrum antibiotics. Currently the guidelines for antibiotics prior to upper gastrointestinal (GI) endoscopy from the British Society of Gastroenterology and American Society for Gastrointestinal Endoscopy suggest prophylaxis only for those at 'high risk'.[1,2] Even in this scenario, the evidence of endocarditis risk is limited to case reports and surrogate markers.

Bacteraemia rates for upper GI endoscopy are similar to those for digital rectal examination (4–5%) and markedly lower than those associated with tooth brushing (25%).[1] Reviewing the literature, we were able to find only four case reports of endocarditis associated with upper GI endoscopy without therapeutic intervention,[3–6] one of which was an emergency procedure with prior haematemesis and nasogastric tube placement.[6] Identification of moderate-risk patients would involve clinical examination of all patients referred for upper GI endoscopy, which would increase pressure on direct access endoscopy services, particularly lists run by nurse practitioners.

We would be interested to know what the number needed to treat to prevent one episode of endocarditis in a moderate-risk patient was estimated to be, and how this compares to promotion of resistant organisms, episodes of *Clostridium difficile* associated diarrhoea or colitis, drug reactions and cost of parenteral antibiotic administration. We are not currently convinced that the presumed benefit of identification and treatment for this patient group outweighs the known harms of widespread antibiotic use.

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In response

Editor – With respect, the majority of patients requiring GI endoscopy do not have cardiac disease that puts them at moderate or high risk of developing infective endocarditis, but in those who are at risk every effort should be made to avoid significant bacteraemia that may result in this potentially life-threatening condition.

The mortality rate remains high (30%) despite modern diagnostic aids, antibiotics and surgical treatment and this is particularly so for patients with prosthetic valves.

In our view, the presence of 'moderate or high-risk' cardiac conditions should be excluded by a careful history and physical examination before performing any invasive investigation including endoscopy. This is simply good medical practice which we expect to be standard for any physician or surgeon and the excuse that this would slow down access to endoscopic investigation is a completely unacceptable one and medicolegally indefensible. Similarly the argument that 'only a relatively few cases' of infective endocarditis after diagnostic endoscopy have been reported in the literature means that the risk is miniscule and can be ignored is quite incredulous. Infective endocarditis has also been reported after transoesophageal echocardiography and this is presumably as a result of procedure-induced bacteraemia.

It is impossible to guess at the number of patients that would have to be treated in order to prevent one episode of infective endocarditis in patients at risk but we feel that the promotion of resistant organisms

and the production of episodes of *C. difficile*-associated diarrhoea or colitis are more theoretical than real for the antibiotic prophylaxis regimens set out in the guidelines published by the British Cardiac Society, the European Society of Cardiology and the American Heart Association.[1–3] The incidence of drug reactions is low and the cost of parenteral antibiotic prophylaxis (when required) is insignificant compared to the cost of medical and surgical treatment of a patient with infective endocarditis. Moreover, the suggestion that antibiotic prophylaxis as indicated in the guidelines might result in widespread harm is a fallacious and feeble one.

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CME on Infection – Management of meningitis

Editor – May I comment on the section about tuberculous meningitis in the CME on infection (*Clin Med* November/December 2004, pp 502–3)? Although ethambutol is often included in the initial phase of standard regimens for the treatment of tuberculosis, I think the use of this agent unwise in tuberculous meningitis, a condition in which optic neuritis is a well-known complication. Ethambutol is especially to be avoided in children and when, as is often the case, consciousness is impaired. The standard US recommendations[1] take this view, while the UK equivalent[2] accepts that the fourth drug may be omitted without loss of potency. So the alternatives are to omit ethambutol and to use a three-drug regimen, acceptable in areas with a low prevalence of isoniazid resistance or, if a fourth drug is indicated in the initial phase, to use streptomycin. Streptomycin and ethambutol were found to be interchangeable as the fourth agent in the large trials on which modern regimens are based.[3] Humphries, with vast experience of the disease in Hong Kong, considers that streptomycin should not be used in pregnancy.[4]

Paradoxical enlargement of tuberculomas, fascinating but rarely causing significant clinical problems, is discussed, but the much more important problem of hydrocephalus is inexplicably omitted. Controlled trials of many aspects of the management of tuberculous meningitis are lacking, but all those with experience of this dangerous disease place great emphasis on early detection and shunting for hydrocephalus as crucial in preventing or mitigating neurological deterioration. The work of Schoeman and colleagues at the University of Stellenbosch has been especially important in documenting the devastating effects of tuberculous meningitis complicated by hydrocephalus.[5]

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In response

We thank Professor Lambert for his insightful comments, which highlight the fact that management of central nervous system (CNS) tuberculosis is a complex issue. In our article we cited the British Thoracic Society (BTS) guidelines, which recommend the use of a four-drug regimen in the initial phase of treatment of tuberculous meningitis (TBM) comprising isoniazid, rifampicin and pyrazinamide, with the fourth drug being one of thambutol, streptomycin, or ethionamide. The authors of the BTS guidelines attached a level of evidence of 'C' to this recommendation.[1]

In our clinical practice, which we believe is probably typical of physicians working in large urban areas, there has been an upsurge of cases of mycobacterium tuberculosis infections (MTB), largely among recent immigrants or asylum-seekers originating from areas with a high incidence of multi-drug resistant TB. In this context (6.3% of UK isolates being resistant to at least one first line drug in 2002[2]), our opinion is that it is now appropriate to treat patients with TBM in the initial phase with four drugs, as the consequences of inadequate treatment are so severe.

Streptomycin is a useful option in therapy, and we use it in a significant minority of our patients. However, it must be given parenterally, as a deep intramuscular injection.[3] Most patients find it so uncomfortable that it is usually mixed with lidocaine to reduce pain. Obviously, this requires extra time and input from healthcare staff, and may prolong a patient's hospital stay. It also, as with all aminoglycosides, carries an increased risk of renal- and oto-toxicity, which necessitates careful monitoring. In our experience, problems with toxicity arise more frequently with use of streptomycin than with ethambutol.

The BTS guidelines also recommend that ethambutol should not be used in unconscious patients, in whom visual acuity cannot be checked prior to onset of treatment, as noted by Professor Lambert. However, the guidelines comment that ethambutol should be used 'where appropriate' in children, provided there is a recognition of the need to report any eye symptoms, and the British National Formulary recommends its use 'with