

## Early parenteral penicillin in meningococcal disease

EDITOR,—There cannot be many general practitioners who, if asked about their worst waking nightmares, would not include the presentation of a child with early meningococcal meningitis. General practitioners would expect to encounter this once in 25 years on average, yet it will haunt them every time they see an unwell child with a fever. Similarly, there cannot be many who are not aware of the need to give parenteral benzylpenicillin in this situation. Why then had about half of patients who had and were suspected to have the disease not been given the treatment, and how can the figures be improved? I believe that had these questions been put to a general practitioner rather than an epidemiologist more useful answers would have been given in an editorial.<sup>2</sup>

Very rare threatening events that are difficult to deal with classically produce denial. Doctors are as subject to this phenomenon as anyone, and this combined with the random practical difficulties (sod's law decrees that the day you need it you left the bag at the surgery while you nipped out to do the extra visit) suggests that a 50% treatment rate is understandable. Further exhortation and penalty reinforce denial. The answer lies in a mixture of these with reduction of the threat by the provision of more relevant information (about the management of sick children) from credible educators and positive feedback about the results of efforts. This means a joint effort by paediatricians and general practitioners to understand more systematically the early management of unwell children in the community (perhaps the equivalent of the Baby Check for parents) and a confidential inquiry system for serious morbidity and mortality in children.

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- 1 Cartwright K, Reilly S, White D, Stuart J. Early treatment with parenteral penicillin in meningococcal disease. *BMJ* 1992;305:143-7. (18 July.)
- 2 Begg N. Reducing mortality from meningococcal disease. *BMJ* 1992;305:133-4. (18 July.)

EDITOR,—I'll continue to carry benzylpenicillin in my bag to treat suspected meningococcal infections before transfer to hospital, but I was not convinced that the studies by Strang and Pugh<sup>1</sup> and Cartwright and colleagues<sup>2</sup> provided evidence for the efficacy of this policy.

The bias introduced by the uncontrolled and non-randomised allocation of treatment in the patients they investigated would render a statistically significant result suspect. As it is, chance is the probable explanation of the results of both studies. Neither achieved a statistically significant result and the confidence limits for the mortality data in

### Advice to authors

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Cartwright's study (0.2 to 1.5) are compatible with anything between an 80% decrease and a 50% increase in mortality attributable to treatment by general practitioners.

If the authors truly believe that these findings are clinically important when the statistics indicate otherwise, then they need to explain the apparently great difference in quality of hospital care between Darlington (case fatality rate for patients pre-treated by their general practitioners=0% (0/13)) and the southwest of England (case fatality rate=5% (5/95)).

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- 1 Strang JR, Pugh EJ. Meningococcal infections: reducing the case fatality rate by giving penicillin before admission to hospital. *BMJ* 1992;305:141-3. (18 July.)
- 2 Cartwright K, Reilly S, White D, Stuart J. Early treatment with parenteral penicillin in meningococcal disease. *BMJ* 1992;305:143-7. (18 July.)

EDITOR,—Jeffrie Strang and Edwin J Pugh's conclusion that parenteral penicillin given before admission probably contributed to a reduction in mortality in patients with meningococcal disease is not justified, given their short sentence that "All patients given oral antibiotics survived."<sup>1</sup> The study also failed to show a significant superiority of antibiotic treatment before admission to hospital over no antibiotic at that stage. Keith Cartwright and colleagues similarly acknowledge failure to show a significant reduction in mortality from using antibiotics before admission either in their study or in anyone else's.<sup>2</sup>

Why then are we encouraged to give an injection of antibiotics before admitting a patient to hospital, even though it significantly reduces microbiological confirmation? I suggest that any improvement has more to do with better diagnosis than with where the patient was when first given antibiotics. If the illness is identified in the community (for example, by recognition of the rash) antibiotic treatment might be started then, but more important may be arranging rapid admission and alerting the hospital to the possible diagnosis. The higher mortality in infants and adults may be accounted for by the increasing difficulty of diagnosis with the reduced incidence of the rash in these age groups.

Though I do not decry the exhortation to give parenteral antibiotics before admission to hospital when meningococcal disease is considered, the real plea must be to continue to suspect meningitis in any person who seems more ill than a simple cold might justify whether he or she has a haemorrhagic rash or not.

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- 1 Strang JR, Pugh EJ. Meningococcal infections: reducing the case fatality rate by giving penicillin before admission to hospital. *BMJ* 1992;305:141-3. (18 July.)
- 2 Cartwright K, Reilly S, White D, Stuart J. Early treatment with parenteral penicillin in meningococcal disease. *BMJ* 1992;305:143-7. (18 July.)

EDITOR,—Several studies have shown that general practitioners seldom give intravenous penicillin before referring patients with suspected meningitis to hospital.<sup>1,2</sup> In the past 30 months only two of the 16 patients with meningococcal infection treated in

our hospital had received benzylpenicillin before admission. We therefore undertook a questionnaire survey of the 110 general practitioners in our district to ascertain their views on the practicability of implementing recommendations of the Department of Health and Social Security regarding giving benzylpenicillin in all cases of suspected meningococcal disease.<sup>4</sup>

Sixty six (60%) of the general practitioners responded to our questionnaire. Sixty were aware of the Department of Health's recommendations, but two thought that intramuscular instead of intravenous penicillin was recommended. Four respondents stated that they were not aware of the recommendations. Interestingly, 55 of the respondents carried benzylpenicillin in their emergency bags.

Difficulty in obtaining benzylpenicillin, the possibility of it deteriorating, and the expense of stocking it were the commonly stated reasons for not carrying it. Uncertainty regarding the diagnosis, the small size of the district, the relative ease of sending patients to an open access paediatric department, and the delays entailed in injecting intravenous drugs in small children were some of the reasons stated for not giving benzylpenicillin.

Encouragingly, all the general practitioners who responded to the questionnaire agreed to carry benzylpenicillin, particularly if they were provided with it. In consultation with the hospital paediatricians we have addressed all the points that the general practitioners raised and have reinforced the Department of Health's recommendations. We are currently arranging to provide benzylpenicillin to all the general practitioners in the district.

Our survey highlights the difficulties perceived by general practitioners in implementing the Department of Health's recommendations. To improve the rate of administration of penicillin before admission these difficulties must be addressed.

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- 1 Rouse AR. A survey of emergency penicillin treatment for meningitis. *Communicable Disease Report* 1992;2:R64-5.
- 2 Strang JR, Pugh EJ. Meningococcal infections: reducing the case fatality rate by giving penicillin before admission to hospital. *BMJ* 1992;305:141-3. (18 July.)
- 3 Cartwright K, Reilly S, White D, Stuart J. Early treatment with parenteral penicillin in meningococcal disease. *BMJ* 1992;305:143-7. (18 July.)
- 4 Department of Health and Social Security. *Meningococcal infection: meningitis and septicaemia*. London: DHSS, 1988. (PL/CMO(88)2.)

## Frequency of citation and outcome of cholesterol lowering trials

EDITOR,—Meta-analysis will inevitably be biased if the data from the individual trials are biased. To avoid this it is essential to ensure that (a) only intention to treat analyses are used; (b) only trials in which participants have been properly randomised between intervention and control groups (with or without stratification) are included; and (c) cholesterol lowering is not confounded by other interventions that might offer an alternative