damage in both clinical studies and animal models of meningitis.

Diagnosing meningococcal meningitis in the community may be extremely difficult. General practitioners should not give dexamethasone in the home as many patients would be treated inappropriately. There have been no placebo controlled trials of dexamethasone to support its use in meningococcal septic shock, but trials of steroids in adult patients with other forms of Gram negative sepsis have shown no benefit.[3]

We stand by our recent recommendation that general practitioners should give parenteral antibiotics before admission to all patients suspected of having meningococcal disease.[4] In all five health districts that participated in a study there was a trend towards increased survival when benzylpenicillin was given before admission, with greatest benefit in the patients who were most ill—those with a haemorrhagic rash.[5]

We therefore endorse the chief medical officer's advice. During the winter general practitioners should ensure that they carry benzylpenicillin among their emergency drugs. If they see a patient in whom they suspect meningococcal disease, especially if a rash is present, they should give a dose, ideally intravenously, before urgently arranging admission to hospital. Admitting paediatricians can remind general practitioner colleagues over the telephone of the value of this treatment. Whether or not benzylpenicillin is given, immediate transfer to hospital is the next urgent priority.

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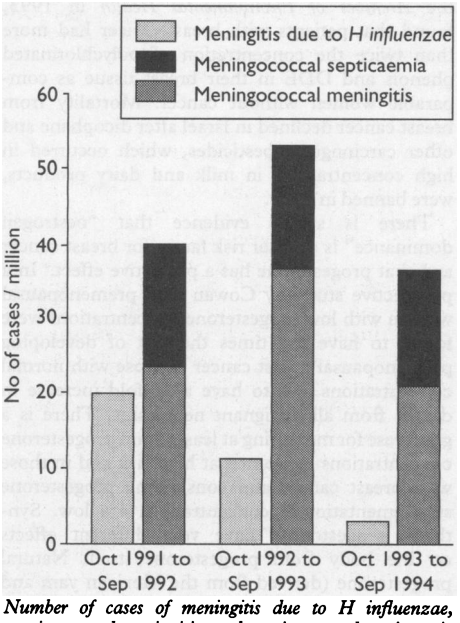
1 Nanayakkara CS, Cox R. Initial management of suspected meningococcal infection. *BMJ* 1994;**309**:1230. (5 November.)
2 Schaad UB, Lips U, Gnehm HE, Blumberg A, Heinzer I, Wedgwood J, for the Swiss Meningitis Study Group. Dexamethasone therapy for bacterial meningitis in children. *Lancet* 1993;**342**:457-61.
3 Bone RC, Fisher CJ, Clemmer TP, Slotman GJ, Metz CA, Balk RA. A controlled clinical trial of high-dose methylprednisolone in the treatment of severe sepsis and septic shock. *N Eng J Med* 1987;**317**:653-8.
4 Cartwright K, Reilly S, White D, Stuart J, Begg N, Constantine C. Management of early meningococcal disease. *Lancet* 1993; **342**:985-6.
5 Brandtzaeg P, Kierulf P, Gaustad P, Skulberg A, Bruun JN, Halvorsen S, *et al.* Plasma endotoxin as a predictor of multiple organ failure and death in systemic meningococcal diasease. *J Infect Dis* 1989;**159**:195-204.

Chief medical officer's guidelines are right

EDITOR,—We regard as unconvincing the evidence to support C S Nanayakkara and R Cox's concluding comments in their letter on the initial management of suspected meningococcal infection.[1] The incidence of *Haemophilus influenzae* type b infection has decreased since the introduction of the immunisation programme. In Birmingham it decreased from 19·8 per million population for the year October 1991 to September 1992 to 2·0 per million for the year October 1993 to September 1994. The figure compares this with the incidence of meningococcal disease over the same period.

Meningococcal infection will therefore increase as a proportion of the total number of cases of meningitis, particularly in childhood. Meningococcal disease may also present as septicaemia, which has a much worse prognosis. Thus the most appropriate management of infection with *Neisseria meningitidis* will become even more important. The role of dexamethasone in the early treatment of meningococcal infection is unclear and remains under review. Most studies agree, however, that in suspected meningococcal disease antibiotics should be given as soon as is appropriate.[2-4] Even Peltola—cited by Nanayakkara and Cox—urged prompt management.[5]



Number of cases of meningitis due to H influenzae, meningococcal meningitis, and meningococcal septicaemia per million population, October 1991 to September 1994 (source: Birmingham Communicable Disease Unit)

In the future, when a general practitioner is presented with a case of meningitis the cause is more likely to be *N meningitidis* than *H influenzae* type b. Nanayakkara and Cox present insufficient evidence to support the statement that early use of benzylpenicillin by general practitioners may be inappropriate or even harmful. Indeed, general practitioners would need to consider whether withholding benzylpenicillin in order to adminster dexamethasone would do more harm than good to their patients.

The chief medical officer's current guidelines on meningococcal disease are based on the scientific data available. Their use should be encouraged by all doctors involved in the early management of the disease.

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1 Nanayakkara CS, Cox R. Initial management of suspected meningococcal infections. *BMJ* 1994;**309**:1230. (5 November.)
2 Begg N. Reducing mortality from meningococcal disease. *BMJ* 1992;**305**:133-4.
3 Cartwright K, Reilly S, White D, Stuart J. Early treatment with parenteral penicillin in meningococcal disease. *BMJ* 1992;**305**: 143-7.
4 Welsby P, Golledge C. Meningococcal meningitis. *BMJ* 1990; **300**:1150-1.
5 Peltola H. Early meningococcal disease: advising the public and the profession. *Lancet* 1993;**342**:509-10.

On the spot treatment needed

EDITOR,—C S Nanayakkara and R Cox's letter highlights the confusion that exists between meningococcal meningitis and meningococcal septicaemia.[1] Life threatening meningococcal disease presents not as meningitis but as septicaemia, often with a rash.[2] Giving penicillin before admission to hospital may decrease the mortality from meningococcal disease[3]; penicillin should therefore be given to those most at risk of dying—that is, those with septicaemia characterised by a purpuric rash. Information and publicity about meningococcal disease should focus on septicaemia, characterised by a petechial or purpuric rash, rather than on meningitis.[2]

In a recent prospective study in Merseyside the most important factor affecting whether children with meningococcal disease received penicillin before admission was the admitting doctor's diagnosis. When meningococcal disease was diagnosed 26 (84%) of 31 children were given penicillin. Of the 19 children diagnosed as having meningitis, however, only three (16%) were given penicillin ($P<0·0001$, Fisher's exact test). To increase the numbers of children given penicillin before admission, attention should focus on meningococcal disease and not meningitis.

There is little evidence that children with bacterial meningitis benefit from antibiotics before admission,[4] although they may benefit from dexamethasone given with, or before, the first dose of antibiotic.[5] There is no evidence supporting the use of dexamethasone in meningococcal septicaemia, and antibiotics should not therefore be withheld before admission from those with a purpuric rash because steroids are unavailable.

The rapid progression of meningococcal septicaemia requires immediate antibiotic treatment to be given by the first doctor to see the patient. Penicillin should thus be recommended before admission for patients with meningococcal disease presenting with a petechial or purpuric rash. Such on the spot treatment might help reduce the mortality from this devastating infection.

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1 Nanayakkara CS, Cox R. Initial management of suspected meningococcal infections. *BMJ* 1994;**309**:1230. (5 November.)
2 Thomson APJ, Hayhurst GK. Press publicity in meningococcal disease. *Arch Dis Child* 1993;**69**:166-9.
3 Cartwright K, Strang J, Gossain S, Begg N. Early treatment of meningococcal disease. *BMJ* 1992;**305**:774.
4 Talan DA, Hoffman JR, Yoshikawa TT, Overturf GD. Role of empiric parenteral antibiotics prior to lumbar puncture in suspected bacterial meningitis: state of the art. *Rev Infect Dis* 1988;**10**:365-76.
5 Schaad UB, Lips U, Gnehm HE, Blumberg A, Heinzer I, Wedgwood J, for the Swiss Meningitis Study Group. Dexamethasone therapy for bacterial meningitis. *Lancet* 1993;**342**: 457-61.

Authors' reply

EDITOR,—F A I Riordan and colleagues highlight the clinical confusion that exists between meningococcal meningitis and meningococcal septicaemia. We would be interested to learn the outcome of the prospective study on Merseyside, particularly in those children in both groups who did not receive penicillin before admission.

The authors emphasise that numbers of children given penicillin before admission could be increased if attention was focused on meningococcal disease, not meningitis. We agree that meningococcal disease presenting clinically with a petechial or purpuric rash requires penicillin before admission. But this distinction is not made or emphasised in the advice given by the chief medical officer[1] or the Communicable Disease Surveillance Centre.[2] Confusion may still exist in the indications for penicillin before admission in children without a rash, who may still have serious meningococcal disease.