

vaccinated after an outbreak appears locally, but developing an immune response usually takes several weeks and this vulnerable period (and beyond) can be covered by chemoprophylaxis. When vaccine is unavailable or the influenza A strain causing an epidemic differs greatly from the vaccine strain, amantadine should be given for the entire duration of the outbreak, a period of about four to eight weeks. Chemoprophylaxis should be considered for all unvaccinated household members and medical and paramedical workers in frequent contact with people at high risk in the home, hospital, or institutional setting. It is also advocated to control established outbreaks in facilities that care for people at high risk, regardless of their vaccination state, but in this setting the rapid emergence of resistance may be a problem.

For doctors the main components of a programme of prophylaxis with amantadine are the timely identification of those at high risk, informing them of the risks and benefits of amantadine, and having adequate supplies of the drug available. Identifying people at high risk should occur early in the year when influenza vaccine is ordered. This should pose few problems for computerised practices that can use the computer to generate prescriptions and personalised information sheets for posting as soon as an epidemic is notified. Alternatively, general practitioners could issue prescriptions throughout the year and instruct patients to take the drug only when an outbreak is identified by the local or national press. This should at least ensure that the drug is available when most required.

Treating established influenza A with amantadine, when the drug is started within 48 hours of symptoms, cuts the duration of fever and other effects by one to two days and accelerates the resolution of the peripheral airways abnormalities that usually accompany influenza.¹⁰⁻²⁰ The reduction in symptoms far outweighs the drug's toxic effects.¹⁸⁻¹⁹ Early treatment—that is, before laboratory confirmation of the diagnosis is generally available—seems essential. Treatment for several days is usually effective, and short courses may lessen the selection of resistant strains of virus.²¹ During a known outbreak of influenza A most people with acute onset of nasal symptoms, feverishness, shivering, cough, headache, myalgia, or anorexia, without vomiting or diarrhoea, will have influenza¹⁹⁻²² and can be considered for treatment, particularly those in high risk groups, in whom complications can be expected.

The recommended prophylactic and therapeutic dose of amantadine is 200 mg daily, reduced to 100 mg in those aged 10-15 or over 65; the suggested dose in children aged 1-9 years

is 2 to 4 mg/kg. The possibility that drug resistance will increase with the extensive use of amantadine, its minor adverse effects on the central nervous system, and the logistic difficulties in organising timely prophylaxis and treatment underscore the importance of immunisation. On balance the adamantanes are still clinically useful and deserve wider distribution as an adjunct to (not a substitute for) vaccination, but doctors should continue to monitor efficacy and the emergence of resistant strains in formal clinical trials.

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- 1 Curwen M, Dunnell K, Ashley J. Hidden influenza deaths. *BMJ* 1990;300:896.
- 2 Hayden FG, Cote KM, Douglas RG. Plaque inhibition assay for drug susceptibility testing of influenza viruses. *Antimicrob Agents Chemother* 1980;17:865-70.
- 3 Grunert RR, Hoffmann CE. Sensitivity of influenza A/New Jersey/8/76 (Hsw1N1) virus to amantadine HCl. *J Infect Dis* 1977;136:297-300.
- 4 Hay AJ, Wolstenholme AJ, Skehel JJ, Smith MH. The molecular basis of the specific anti-influenza action of amantadine. *EMBO J* 1985;4:3021-4.
- 5 Belshe RB, Smith MH, Hall CB, Betts R, Hay AJ. Genetic basis of resistance to rimantadine emerging during treatment of influenza virus infection. *J Virol* 1988;62:1508-12.
- 6 Heider H, Adamczyk B, Presber HW, Schroeder C, Feldblum R, Indulen MK. Occurrence of amantadine and rimantadine-resistant influenza A virus strains during the 1980 epidemic. *Acta Virol* 1981;25:395-400.
- 7 Belshe RB, Burk B, Newman F, Cerruti RL, Sim IS. Resistance of influenza A virus to amantadine and rimantadine: results of one decade of surveillance. *J Infect Dis* 1989;159:430-5.
- 8 Hayden FG, Belshe RB, Clover RD, Hay AJ, Oakes MG, Soo W. Emergence and apparent transmission of rimantadine-resistant influenza A virus in families. *N Engl J Med* 1989;321:1696-702.
- 9 Kubar OI, Brjantseva EA, Nikitina LE, Zlydnikov DM. The importance of drug resistance in the treatment of influenza with rimantadine. *Antiviral Res* 1989;11:313-6.
- 10 Nicholson KG. Antiviral agents in clinical practice: properties of antiviral agents. *Lancet* 1984;iii:562-4.
- 11 Bryson YJ, Monahan C, Pollack M, Shields WD. A prospective double-blind study of side-effects associated with the administration of amantadine for influenza A prophylaxis. *J Infect Dis* 1980;141:543-7.
- 12 Oxford JS, Galbraith A. Antiviral activity of amantadine: a review of laboratory and clinical data. *Pharmacol Ther* 1980;11:181-262.
- 13 Tominack RL, Hayden FG. Rimantadine hydrochloride and amantadine hydrochloride use in influenza A virus infections. *Infectious Disease Clinics of North America* 1987;1:459-78.
- 14 Dolin R, Reichman RC, Madore HP, Maynard R, Linton PM, Webber-Jones J. A controlled trial of amantadine and rimantadine in the prophylaxis of influenza A infection. *N Engl J Med* 1982;307:580-4.
- 15 Galbraith AW, Oxford JS, Schild GC, Watson GI. Study of adamantanamine hydrochloride used prophylactically during the Hong Kong influenza epidemic in the family environment. *Bull WHO* 1969;41:677-82.
- 16 Department of Health, Welsh Office, Scottish Home and Health Department. *Influenza. Immunization against infectious disease*. London: HMSO, 1990:90-5.
- 17 World Health Organisation. Current status of amantadine and rimantadine as anti-influenza-A agents: memorandum from a WHO meeting. *Bull WHO* 1985;63:51-6.
- 18 Wingfield WL, Pollack D, Grunert RR. Therapeutic efficacy of amantadine HCl and rimantadine HCl in naturally occurring influenza A2 respiratory illness in man. *N Engl J Med* 1969;281:579-84.
- 19 Van Voris LP, Betts RF, Hayden FG, Christmas WA, Douglas RG. Successful treatment of naturally occurring influenza A/USSR/77 H1N1. *JAMA* 1981;245:1128-31.
- 20 Little JW, Hall WJ, Douglas RG, Mudholkar GS, Speers DM, Patel K. Airway hyperreactivity and peripheral airway dysfunction in influenza A infection. *Am Rev Respir Dis* 1978;118:295-303.
- 21 Hall CB, Dolin R, Gala CL, et al. Children with influenza A infection: treatment with rimantadine. *Pediatrics* 1987;80:275-82.
- 22 Hayden FG, Hall WJ, Douglas RG. Therapeutic effects of aerosolized amantadine in naturally acquired infection due to influenza A virus. *J Infect Dis* 1980;141:535-42.

Domiciliary visits

We need to identify the ones worth doing

In most health systems the problem with services paid for by a fee per item of service is to contain them. Surprisingly, this is not the case with domiciliary consultations within the NHS—visits paid for separately and made by consultants at the request of general practitioners to patients who cannot attend hospital. Although domiciliary visits are generally regarded as time consuming and clinically inefficient, most consultants agree to provide them, but their number has been falling since 1978-9.

Although the average number of visits made per consultant and per general practitioner has fallen,¹ large variations in their use remain. The review body, no longer as interested in

the sums earned through domiciliary visits as it had been in the early 1980s,² nevertheless commented in 1986 on the wide variation between specialties.³ Ever since O'Brien and Jessops hinted that these variations might be a suitable subject for clinical audit⁴ the Northern region has pursued a policy of analysing the data on domiciliary visits and feeding it back to consultants. Donaldson and Hill (p 449) describe the savings the region has made and also provide interesting, though tantalisingly incomplete, data on patterns of use from a prospective survey of nearly a year's data in all the non-teaching districts in the region.⁵

Overall 86% of general practitioners requested fewer than

10 visits over the period, but 20 (1.2%) requested more than 40. Of particular interest, however, are the pairings of certain consultants and general practitioners responsible for more than 12 visits over the period; moreover, several of the individual consultants and general practitioners had similar pairings with more than one person. Unfortunately we are not told anything about the pairers. It would have been interesting to know whether the particular consultants and general practitioners had other associations—for example, through clinical assistantships. A fruitful course of inquiry, made easier by the incorporation of family health services authorities under the umbrella of regional health authorities, might be to visit the general practitioners and establish the reasons for their high request rates.

The recent review by Wilkin and Dornan of general practitioners' referrals has shown how little we understand about the right level of service.⁶ The same applies to domiciliary visits, which began with a clear purpose and whose use and value have changed over time. Many general practitioners still seem to think that a "home assessment" is best obtained by asking for a domiciliary visit; others that they have to request a visit to secure a patient's admission. Both views are wrong, but hospitals could do more to make their admission policies explicit. There are now enough examples, particularly in the care of elderly patients, of how a clear statement of what a hospital will and will not do can break down the barriers preventing admission (and discharge). Similarly, general practitioner fundholders will have an influence on domiciliary visits. They will now have a specific budget which will include this service, and when they do request a visit they should be more discriminating because they will have to pay for it. Many potential fundholders are already suggesting that consultants should hold outpatient

clinics within their practices. If such clinics are regular and frequent domiciliary visits might be done on the same day, with the general practitioner in attendance, now an uncommon feature of domiciliary visits.

There are also contrary pressures that might stem the downward trend of domiciliary visits: the increased emphasis on day care, shared care, and care in the community and calls on the service from other members of the primary care team, such as social workers. Dowie's interviews with 45 doctors in one district identified several good reasons why general practitioners requested domiciliary visits.⁷ These include advising on the management or palliative care of a terminally ill patient who wants to die at home. Another example would be to advise on severe acute back pain, where a consultant's opinion might reassure the patient, relatives, and primary care team. The fact that domiciliary visits do seem to have a place, albeit a limited one, suggests that future studies should concentrate not simply on the minority of consultants who do many visits but on the majority who do only a few, to identify the problems for which they think a domiciliary visit is a good use of everyone's time.

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- 1 Fry J, Sandler G. Domiciliary consultations: some facts and questions. *BMJ* 1988;297:337-9.
- 2 Review Body on Doctors' and Dentists' Remuneration. *12th report 1982*. London: HMSO, 1982. (Cmnd 8550.)
- 3 Review Body on Doctors' and Dentists' Remuneration. *16th report 1986*. London: HMSO, 1986. (Cmnd 9788.)
- 4 O'Brien M, Jessops E. Domiciliary consultations in the Northern Region. *Hospitals Health Services Review* 1983 May:115-7
- 5 Donaldson LJ, Hill PM. The domiciliary consultations service: a time to take stock. *BMJ* 1991;302:449-51.
- 6 Wilkin D, Dornan C. *General practitioner referrals to hospital—a review of its research and its implications for policy and practice*. London: Department of Health, 1990.
- 7 Dowie R. National trends in domiciliary consultations. *BMJ* 1983;286:819-22.

Extending the role of the community pharmacist

Depends on extending training and regulation

The professional role of the community pharmacist has been largely concerned with preparing and dispensing prescriptions. As a consequence, pharmacists' training has been biased towards pharmacology, pharmaceuticals, and pharmaceutical chemistry. Yet, despite the good service pharmacists have given the public, the increasing availability of finished pharmaceutical products from the drug industry and the trend to original pack dispensing have severely constrained the traditional activities of community pharmacists. Over the past few years pharmacists generally have been debating the direction their profession should take.¹⁻³ The so called "extended" role of the community pharmacist broadly encompasses three activities.

Firstly, pharmacists want to develop their dispensing services.³ They wish to offer better and more regular advice to patients on how to use prescribed medicines. They see benefits to patients in developing domiciliary services, especially collecting and delivering prescriptions for elderly, mentally ill, and physically disabled patients.⁴ They also believe that they could ease some of the burdens, for both the patient and the prescribing doctor, of obtaining repeat prescriptions.^{3,5} These activities (which already form part of the conventional work of the pharmacist) seem eminently desirable and should have the support of doctors.

Secondly, at least some pharmacists want to develop

diagnostic services. These include growth velocity measurements in children, routine urine and pregnancy testing, and screening for hypertension and hypercholesterolaemia.^{2,6,7} There is no absolute reason why pharmacists should not engage in such activities provided that they carry them out in an efficient and well regulated manner and with the support of general practitioners. Whether such activities would, however, have any impact on public health is uncertain, though they might.⁶ Consequently, although further carefully designed pilot schemes should be encouraged, it would be premature for community pharmacists to offer these routine diagnostic services.

Thirdly, community pharmacists wish to pursue their advisory role in health care, and, particularly, in treating minor self limiting conditions. Such activities are, of course, not recent: pharmacists have been giving therapeutic advice for many centuries. Moreover, as there is a specific class of drugs that only pharmacists can provide (as opposed to general retail outlets) it is inevitable that consumers will seek advice on their purchase. Community pharmacists are also available to the public throughout the working day with no appointments, no receptionists, and no direct charges. They are therefore readily available to provide advice on health care, and there is clear evidence that they offer a service that many general practitioners and consumers both value⁸⁻¹¹ and