extraction we have used the prevalence of cataract in the population and the methods to which the authors refer to derive estimates of the incidence.³ We adjust for ethnic origin, the discrepancy between diagnostic and operative thresholds, attrition by death, and the level of contraindicated operations. Our estimates also suggest that unmet need for cataract extraction exists but they are unaffected by factors such as knowledge of, or access to, services that may distort demand incidence among elderly people.

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1 Sheldrick JH, Vernon SA, Wilson A, Read SJ. Demand incidence and episode rates of ophthalmic disease in a defined urban population. *BMJ* 1992;305:933-6. (17 October.)
2 Wormald RPL, Wright LA, Courtney P, Beaumont B, Haines AP. Visual problems in the elderly population and implications for services. *BMJ* 1992;304:1226-9.
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4 Northern Regional Health Authority. *Assessing the need for cataract extraction in the Northern region*. Newcastle: NRHA, 1991.
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EDITOR,—By using a defined population base and considering both hospital and primary eye care services in Nottingham J H Sheldrick and colleagues have made considerable advances on previous published work on the pattern of presentation of eye disease to health care services.¹ The study would have been further enhanced, however, by consideration of the role of the high street optician. It is not clear whether everyone referred by optometrists to the hospital eye service during the study was included. Although some reference is made to asymptomatic disease picked up by screening by the optometrist, it would have been interesting to see the impact of this route of referral presented separately.

Though appreciating the value of the work accomplished, we disagree with the authors that demand incidence and demand episode rate are useful variables on their own for the planning of eye health care services. Although the rationale for such measures—that only patients presenting for medical attention create work for medical services—seems to be common sense, it ignores the fact that one of the most potent influences on demand is actually supply of services. As A Ralph Rosenthal points out in his accompanying editorial,² supply is changing dramatically with the introduction of new technology. For example, the visual acuity thresholds at which cataract surgery is recommended have dropped over the past 10 years and will change more with the introduction of phako-emulsification. We have calculated that this will create over 80 000 potential extra cases of cataract surgery in North West Thames region alone (unpublished data).

Thus planning services based on activity has left purchasing health authorities in the position of watching their waiting lists for cataract surgery get longer, while contracts based on demand calculated from activity are exceeded. Even allowing for the known age related distribution of demand shown in Sheldrick and colleagues' paper does not alleviate this problem.

If we really wish to plan eye health services rationally we need to develop a model incorporating information on the structure of the population and projected demographic change, estimates of the incidence of visually disabling eye disease, and determinants of uptake of services. At present we can only guess at the parameters of this model.

Properly focused epidemiological and health services research—in particular, a well designed longitudinal study—providing estimates of incidence is urgently needed.

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2 Rosenthal AR. The demand for ophthalmic services. *BMJ* 1992;305:904-5. (17 October.)

EDITOR,—J H Sheldrick and colleagues' paper¹ and A Ralph Rosenthal's accompanying editorial on the demand for ophthalmic services² will be welcome ammunition to ophthalmologists seeking resources. Some of the equipment cited by Rosenthal as being desirable, however, will be nothing more than a pipe dream for those eye units whose financial masters do not even allow for the provision of proved technology already in widespread use, such as automated perimetry.

In my view the implications of excimer lasers differ greatly from those of other new modalities; there is more to this than "perfection of techniques" and "about £200 000 per machine"—more even than training staff and finding suitable space for such equipment in existing, often cramped, accommodation. The introduction of a new treatment for a potentially large market with a visually non-threatening condition must on no account be allowed to divert resources from the already overburdened provision for patients with non-refractive disorders. It must therefore be funded additionally, and justifying any source of finance other than that in force for the few lasers already in private use—namely, direct payment by the patient/client—may be difficult, certainly as far as low ametropia is concerned. Strategically located excimer units staffed by experts could thus emerge, providing also a service for the NHS to non-paying patients with certain other disorders for which excimer lasers hold promise.

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2 Rosenthal AR. The demand for ophthalmic services. *BMJ* 1992;305:904-5. (17 October.)

Paradoxical bronchoconstriction and salmeterol

EDITOR,—Brian H Davies¹ disputes the use of the word "paradoxical" in my and colleagues' report of bronchoconstriction after the use of salmeterol by metered dose inhaler² and our view that salmeterol has a slower onset of action than salbutamol.

I believe that our use of "paradoxical" in the title is appropriate in that the response expected after inhalation of a bronchodilator is bronchodilatation. Acute bronchoconstriction, be it due to the active drug or to other constituents in the formulation, might therefore reasonably be viewed as a paradoxical response to the medication. The same terminology has been used in previous reports of this phenomenon³ and is currently used in Allen and Hanburys' prescribing information.

More importantly, Davies is mistaken in believing that salbutamol and salmeterol share the same time of onset of action. I am unaware of the "accumulated evidence . . . in many comparative studies" to which he alludes. It seems at odds with Boyd *et al*'s finding of a median time to 15%

improvement in forced expiratory volume in one second of 7 minutes for salbutamol metered dose inhaler and 14 minutes for salmeterol metered dose inhaler ($p=0.04$),⁴ and of a median time to peak bronchodilatation of 60 minutes for salbutamol and 150 minutes for salmeterol metered dose inhaler ($p=0.036$).⁵

Information on these and the other single dose studies (which similarly show a differential onset of action) is available on request from Allen and Hanburys' medical information department, which has confirmed the slower onset of action of salmeterol (personal communication). This is consistent with our findings. Thus the view that bronchoconstriction induced by the vehicle may be unmasked is justified.

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1 Davies BH. Paradoxical bronchoconstriction and salmeterol. *BMJ* 1992;305:1161. (7 November.)
2 Wilkinson JRW, Roberts JA, Bradding P, Holgate ST, Howarth PH. Paradoxical bronchoconstriction in asthmatic patients after salmeterol by metered dose inhaler. *BMJ* 1992;305:931-2. (17 October.)
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Health effects of organophosphate sheep dips

EDITOR,—Virginia S G Wiseman and colleagues write of the adverse effects of organophosphate sheep dips on health.¹ Organophosphate insecticides have been used in crop production and livestock husbandry worldwide for over 40 years. The symptoms of human toxicity and the treatments are well recorded. Over the past three years the safety of workers using organophosphate sheep dips has received much publicity in the farming media. The Health and Safety at Work Act and Control of Substances Hazardous to Health Regulations require farmers to guard against chemical and biological hazards on farms.

In Britain sheep dips are classed as veterinary medicines and must be licensed under the Medicines Act 1968. Every label carries detailed advice on protective clothing and advice to doctors on treatment. This is regularly reviewed by the Veterinary Products Committee (on behalf of the Ministry of Agriculture, Fisheries and Food), the Health and Safety Executive, and the manufacturers of sheep dips—all of whom are members of the National Office of Animal Health.

There are 95 000 sheep farms in the United Kingdom. Last autumn dipping was compulsory and involved roughly 300 000 people. Murray and colleagues report 34 cases of exposure to organophosphate dips, of which three were accidents; the remaining 31 cases include 15 cases in which patients were not wearing protective clothing as instructed. Details of the 16 others are not reported. We share Murray and colleagues' concerns. The fact that half of the patients reported on had taken no safety precautions after great publicity may seem surprising but is supported by reports from the Health and Safety Executive and companies.

This year both the Health and Safety Executive and the National Office of Animal Health have commissioned trials from the Institute of Occupational Medicine to investigate dipping practices and protective clothing. This will be reported to the Ministry of Agriculture, Fisheries and Food; thus even more detailed advice on pro-

tection should be available in time for the dipping season next year. General practitioners in rural areas can help by impressing on patients the importance of following the safety advice on the labels of all farm chemicals, including sheep dips, whether they contain organophosphates or not.

Occasional reports are received of patients suspected to be suffering long term, recurrent effects from use of organophosphate sheep dips. Such effects do not equate with the known symptoms due to organophosphates used in sheep dips in Britain. The vague, flu-like symptoms of organophosphate poisoning resemble those of several zoonotic diseases (leptospirosis, brucellosis) encountered in farm livestock. Awareness of the possibility of zoonotic disease is essential for a doctor faced with such symptoms in a patient who is associated with a farm.

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1 Murray VSG, Wiseman HM, Dawling S, Morgan I, House IM. Health effects of organophosphate sheep dips. *BMJ* 1992;305:1090. (31 October.)

EDITOR,—Virginia S G Murray and colleagues draw attention to the acute toxic effects of organophosphates in sheep dips,¹ which have been well known to the farming community in north Devon and described as “dip flu.” In the summer of 1991 the public health medicine department in north Devon set up an information service as farmers were concerned about both acute toxicity and long term effects.

The service presented the opportunity to obtain structured information from the 43 people who made contact with the department and answered a questionnaire. Naturally they are a skewed sample, but the findings suggest that there is a considerable problem with toxicity weeks and months after exposure to organophosphates. People who may have been dipping sheep for years suddenly develop symptoms. These are similar to those of myalgic encephalomyelitis: weakness, muscle pains, mood swings, irritability, and chronic tiredness. The symptoms vary from day to day but have a dramatic effect on the quality of life of the people concerned, many of whom have had to leave sheep farming altogether, with a major impact on their families and their livelihoods.

Anecdote in the local community suggests that many other people who work with sheep have suffered similar symptoms, and further investigation is required. The poisons reference centre and the department of occupational health medicine in Birmingham have piloted further work among these 43 people in north Devon. A case-control trial is planned. There is no diagnostic test specific to chronic organophosphate toxicity, and part of the pilot study was to determine appropriate markers, using psychometric, toxicological, and neurological tests.

It seems that organophosphates may have a cumulative toxic effect, but the data are not easily analysed because of problems in measuring exposure and protection, etc. Whether we are dealing with a cohort effect or a chronic neurological toxin with long term damage to the nervous system remains to be elicited.

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EDITOR,—We were interested to read the letter by V G Murray and colleagues concerning the acute clinical effects after exposure to sheep dips.¹ We

report a case of symptomatic right ventricular tachycardia that occurred after exposure to sheep dip.

A previously fit 28 year old farmer was referred to the outpatient department by his general practitioner because of transient feelings of faintness for two months. These symptoms occurred once or twice a day while the patient was working and were accompanied by chest tightness. He had to rest for a few minutes before resuming activities. There was no relevant personal or family history, and there were no abnormal clinical signs. A resting electrocardiogram obtained by his general practitioner showed short runs of ventricular tachycardia (heart rate 150/min).

In the preceding two months he had been dipping sheep (Osmond's Gold Fleece Sheep Dip—diazinon 60%, epichlorhydrin 1%, emulsifiers 8%, and solvent 31% weight for weight; manufacturer's details) without wearing protective clothing. Twenty four hour electrocardiographic recording showed non-sustained, broad complex tachycardias lasting for up to 30 beats, and a 12 lead electrocardiogram indicated a right ventricular origin (QTc=0.35 s).

Serum electrolyte values, thyroid function, and results of echocardiography, coronary angiography, and left ventricular angiography were normal. Pace mapping from the right ventricular outflow tract reproduced complexes of the morphology of the arrhythmia.

We had excluded ischaemic heart disease and overt cardiomyopathy as a cause of the arrhythmia. Our diagnosis was ventricular tachycardia originating from the right ventricular outflow tract. We did not take a biopsy sample of the right ventricle, but we considered a differential diagnosis of right ventricular outflow tract dysplasia.^{2,3} Treatment with verapamil and flecainide did not totally suppress the non-sustained ventricular tachycardias. The symptoms disappeared and treatment was stopped after five months. The patient was advised to avoid sheep dipping.

Two months later he was handling sheep which had recently been dipped. He felt unwell and had recurrent symptoms of faintness until metoprolol was prescribed. Subsequent 24 hour monitoring disclosed non-sustained ventricular tachycardia.

Organophosphorus pesticides have been associated with QT prolongation and torsade de pointes.⁴ We did not measure erythrocyte cholinesterase activity⁵ and it remains unproved whether the chemical exposure was the actual cause of the arrhythmia. However, the temporal sequence on two occasions suggests a causal link between the organophosphate diazinon and precipitation of more sustained episodes of ventricular tachycardia with symptoms.

Details of this case have been sent to the West Midlands Poisons Information Centre for the Trent and West Midlands Regions; the National Poisons Unit, Guy's and Lewisham NHS Trust; and the Health and Safety Officer, Belgrave House, Northants NN1 2BF.

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- 1 Murray VG, Wiseman HM, Dawling S, Morgan I, House IM. Health effects of organophosphate sheep dips. *BMJ* 1992;305:1090. (31 October.)
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Abortion in the first trimester

EDITOR,—David Paintin's editorial on abortion in the first trimester¹ has generated considerable correspondence,² naturally enough from those with strong views on the subject. Most ordinary people do not hold radical views on abortion. An unwanted pregnancy is often a major life crisis for the woman concerned, and it is probably only then that she really explores her moral position on the subject. The demand for early termination of pregnancy currently exceeds the willingness of the health service to provide a service, indicating that an appreciable proportion of women have come to the conclusion that termination of pregnancy is acceptable to them.

It is essential, in our free society, that the views of the radical few should not be forcibly applied to the silent majority. Furthermore, the current legal position, whereby two medical practitioners “decide” who may or may not have an abortion, is anachronistic. A doctor cannot gain any real insight into a woman's social position or her mental state in a consultation lasting for a few minutes. Unfortunately, there are still practitioners who refuse a request for termination of pregnancy from a socially disadvantaged woman who has had previous abortions, on the basis that the lesson should by now have been learnt, while agreeing to a request from an articulate woman in a higher social class, with whom they have greater empathy.

Any woman with an unwanted pregnancy should receive adequate help and support from both relatives and the social services if she chooses to continue that pregnancy. Similarly, if a woman chooses to terminate her pregnancy legislation and the health service must provide the facilities to allow her to exercise that choice.

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- 1 Paintin D. Abortion in the first trimester. *BMJ* 1992;305:967-8. (24 October.)
- 2 Correspondence. Abortion in the first trimester. *BMJ* 1992;305:1221-2. (14 November.)

EDITOR,—David Paintin argues that women should have the right to choose abortion.¹ In a postfeminist society it seems to me that women, far from being freed from unplanned pregnancies, are being asked to assume sole responsibility for these pregnancies. They are perhaps being asked to “choose” abortion.

Men, on the other hand, seem to be absolved from any responsibility to women whom they have impregnated. After all, if the woman is pregnant and is free to choose abortion then the male society has no further obligation to her. I believe that this represents a dereliction of duty on the part of men towards women.

I am one of those whom Paintin describes as “maintaining that abortion is always wrong.” But I also believe that the hazards to women's health occasioned by unplanned pregnancy are compounded by the perception of unplanned pregnancy as the woman's problem. Until men honour their responsibilities to women these hazards will remain.

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EDITOR,—David Paintin's thoughtful leading article¹ has produced correspondence from both sides of the abortion argument.² In practice abortion on demand has always been available in the