Publicity and health education

It is to be hoped that most doctors and health workers are critical and intelligent individuals, and under direct pressure from an increasingly informed public. Faith in an immunisation policy must be based on an understanding of its foundations, communicated from the experts in detail and on a regular basis. Over 18 months elapsed between the "Nationwide" feature on whooping cough immunisation and the published reply by the Joint Committee on Vaccination and Immunisation,² although the information contained in this statement was available at the time of the television programme. Television must be harnessed to strengthen public acceptance of immunisation policy, not to undermine it, remembering especially that for most young parents diphtheria and poliomyelitis are insubstantial ghosts of the past. Moreover, school doctors and teachers need to look at methods of introducing more about disease prevention into school curricula.

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Contemporary Themes

Dog bites and rabies: an assessment of risk

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With rabies continuing its march across Europe the threat to man in Britain is increasing. The greatest risk, given that any rabies infecting Britain would be fox-led as it is in continental Europe, is likely to be the domestic dog. With this in mind a study of dog bites inflicted on man in the absence of rabies should give some indication of the nature and size of the problem that would need to be managed should rabies arise.

Certain risk factors must be considered when deciding on postexposure treatment for rabies. These are: (a) age of victim—the risk of progression to clinical rabies is greater in young children than in adults; (b) site of bite—bites in densely innervated areas and places close to the central nervous system are the most dangerous. Thus, bites on the head, neck, and fingers cause most concern; (c) severity of wound—though rabies has been reported as occurring after very mild wounds and even licks by rabid animals, in general the more tissue destruction there is and the deeper the wound the more likely is rabies to follow; and (d) state of dog's health—when possible the state of health of the offending dog should be ascertained and the

dog kept under observation for 10 days after the incident so that any change may be detected, antibody studies performed, and a necropsy done if the animal dies. Therefore bites from dogs whose whereabouts are unknown (wild and stray animals) are more worrying.¹

Under certain circumstances a single criterion may be sufficient for a decision to use vaccine or serum, or both. For example a mild bite in any young child or a bite from an unknown dog might both be considered as meriting vaccine if other less certain criteria such as a lack of provocation are fulfilled.

These four main criteria have been used to indicate the probable size of the demand for treating dog bites.

Material and methods

All cases of dog bite presenting at the accident and emergency department (AED) of Walton Hospital, Liverpool, from 1 November 1974 to 31 October 1975 were studied. Information on the total number of dog bites, the age of the victims, and, when possible, the site of the bite, was obtained from the AED register supplemented by individual record cards where the register was incomplete. The age grouping was used to establish the degree of comparability of a smaller sample that was studied in more detail (see below). The collection of information on the site of bite was abandoned because of a lack of precise information.

A more detailed analysis was made of all dog bites presenting from 13 October 1975 to 12 November 1975. The following information was obtained from each patient: personal details (age and sex); details of wound (site (marked on an outline figure) and severity,

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TABLE I—Number of cases of dog bite presenting 1 November 1974 to 31 October 1975

Months No of patients	Nov 108	Dec 113	Jan 113	Feb 118	Mar 125	Apr 176	May 205	Jun 215	Jul 290	Aug 272	Sept 185	Oct 144

TABLE II—Age distribution of cases of dog bite in sample

Age	≤4	5-9	10-14	15-19	20-29	30-39	40-49	50-59	≥60	Total
No (%)	8 (7.5)	11 (10.4)	25 (23.6)	17 (16)	13 (12.3)	9 (8.5)	10 (9.4)	7 (6.6)	6 (5.7)	106 (100)

graded as skin unbroken, abrasion with serum or blood ooze, superficial laceration, deep laceration or puncture wound); details of dog, graded as: owned by patient's family, owned by person known to patient, dog but not owner known to patient, dog and owner both unknown to patient. These data were entered on a coding sheet for analysis.

A street survey was carried out to ascertain local public attitudes towards the advisability of seeking treatment for dog bites. Adults chosen at random in the centre of Liverpool were asked what degree of severity of a bite would cause them to seek treatment and what their main concern would be in seeking such help.

Results

ANALYSIS OF ATTENDANCES 1974-5

In the 12 months from 1 November 1974 to 31 October 1975 2064 people were treated for dog bites. This was 3.02% of the total attendance for all complaints over the period, and represented an annual incidence of about 500 per 100 000 people, the department having a catchment population of about 400 000.

There appears to be a definite seasonal pattern (table I), probably accounted for by the increased man/dog contact in the longer daylight hours and aggravated by the exceptionally hot summer, which frayed the tempers of the canine population. The July figure of 290 represented 4.6% of all attendances for that month. The age distribution was similar to that in the sample studied below (table II).

SAMPLE ANALYSIS

The data for 30 of the 136 cases had to be discarded because of incomplete or inaccurate data or mislaid records. Attempts to rectify these errors were unsuccessful. The age and sex distributions of the remaining 106 were similar to those of the original 136.

Age (table II)—41.2% of victims were aged 14 or less; 17.9% were under 10.

Sex—Males outnumbered females by 74 to 32.

Site of wound—Legs 37%, arms 13%, trunk 9%, head and neck 11%, and hands 30%.

Severity of wound—Superficial abrasions in 48%, skin not broken in 24%, superficial lacerations in 20%, and deep lacerations (including puncture wounds) in 8%.

Patient's knowledge of dog—The dog's owner was known to the patient in 42% of the cases and not known in 33%. The last figure includes the 28% of all patients bitten by dogs unknown to them. Altogether 25% of the bites were from the patients' own dogs.

PUBLIC ATTITUDE SURVEY

All 100 members of the public interviewed would seek treatment for bites which broke the skin. Of these 61 would attend for any bite. All but 10 stated that they would go to the hospital first rather than to their general practitioners. It was interesting to find that 40 of them put the fear of rabies as their prime reason for seeking treatment, some stating their belief that antirabies treatment had supplanted antitetanus toxoid in hospital casualty departments. Tetanus was considered the major risk by 25 and the remaining 35 worried about less specific infections (such as myxomatosis).

Discussion

These figures cannot be taken as necessarily giving an accurate forecast of the problem should rabies occur, but they throw some

light on the probable size of the problem. Even in the absence of rabies an incidence of dog bites as high as this is a health problem that should be taken seriously. A fifth of the cases in the sample studied required at least one further attendance for redressing, reassessment, or removal of sutures. One of these needed extensive skin grafting and a prolonged stay in hospital. In terms of staff time, materials used, and working time lost the cost must amount to many hundreds of pounds over the month.

In considering the breakdown of the sample one may select from each of the criteria the grade constituting the greatest rabies risk. These are: (a) children under the age of 10 years; (b) wounds on the head, face, neck, and hands; (c) deep lacerations and punctures; (d) an unknown dog whose owner, and therefore whereabouts, is unknown.

It is thus possible to establish the relative risk of exposure in each person. It must be emphasised that this method can only give a rough indication of the real risk and would not be satisfactory under clinical conditions. With this approach it may be calculated that 70.8% of the sample were exposed to at least one risk factor, 24.5% to at least two, and 5.7% to three. Nobody scored on four risk factors.

It is a fair assessment that, as a minimum, the 24.5% of the sample exposed to two or more risk factors would merit at least consideration for postexposure vaccination. Over the year this represents about 500 people whose treatment would require above-average clinical time and concern.

Despite the risks of morbidity and mortality connected with them, vaccine and serum tend to be overused as a direct and understandable result of the fear of rabies by the public and the medical profession. In the USA in 1973, about 20 000 patients were given vaccine after cat and dog bites. Rabies was confirmed in 311 cats and dogs.² Working to a safety margin like this the cost of postexposure treatment in a community which is as careless with its dogs as are some areas of Liverpool could be very high indeed.

If rabies actually arrived in Britain two factors might be expected to alter the attendance pattern. Firstly there would be a reduction in the stray dog population. This would be enforced if Liverpool was declared an infected area and would therefore undoubtedly reduce both the number of dog bites and the real risk of rabies, but anxiety after dog bites and the concomitant increase in pressure on the doctor is likely to occur in Liverpool with rabies present anywhere in the country. The second event that could occur is that more people may bring their bites to hospital. The results of the street survey suggests that most people with wounds which break the skin are already presenting and that any increase is likely to be in the very minor wounds, which are clinically less worrying.

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