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## Medical hazards from dogs

Domestic animals are a source of pleasure to many people and may have a beneficial effect on their physical and mental wellbeing.<sup>1</sup> There are, however, public health problems associated with "man's best friend"—the dog—which have recently been extensively reviewed in *Community Medicine*.<sup>2,4</sup>

The size of the British dog population has increased from 3·8 million in 1960 to 6 million in 1979, and this is probably an underestimate. Information on the number of dogbites is also unreliable as many are not recorded. By using data available for England and Wales Baxter estimated that there were 209 000 dogbites a year (4·2/1000 population).<sup>2</sup> Almost twice as many boys and men were bitten as girls and women, with the highest number aged between 5 and 19 years. Others at risk included postmen and delivery men. Not surprisingly, dogbites were most common between April and September, when people move out of doors. Young male dogs were more likely to bite than bitches. The common reasons for biting were self defence, unintentionally during play, and protecting property: only rarely was biting associated with aggression and savagery. The financial cost of bites was estimated as £33·50 a case for hospital treatment (at 1983 prices)—which for England and Wales meant a total cost of £7m a year.

Road traffic accidents where dogs played a direct or indirect part were more difficult to define, quantify, and cost accurately. To extrapolate from police statistics of dog associated road traffic accidents known to Greater Manchester

Police during 1957-77, dogs appeared to have been associated with 0·77% of all accidents. Baxter estimated that for England and Wales the police knew of about 980 000 non-injury accidents, which included 160 000 (16%) associated with dogs.<sup>2</sup> This is probably a gross underestimate, as English law requires a motorist to notify an accident to the police only if another person, vehicle, farm animal, or dog has been injured or damaged and particulars have not been given by anyone else—for example, the owner of the other vehicle or the dog.

Data about accidents on private property, the number of home accident victims, and the percentage who had had dog associated accidents other than dogbites were estimated by using a representative sample from 20 accident and emergency departments in England and Wales during 1976. This suggested that 4360 dog associated home accident victims required hospital treatment.<sup>5</sup>

From the overall figure of roughly 214 000 dog associated injuries in England and Wales each year requiring hospital treatment, 209 000 (98%) would be dogbites, 4000 (1·9%) home accidents other than bites, and 1000 (0·5%) road traffic accidents. Dog associated accidents causing injury were most common in riders of two wheeled vehicles. Baxter estimated the total cost of these (including morbidity, pain, damaged property, loss of earnings, health service costs, as well as police and legal costs) to be £40m annually (1983 prices), with 85% of this due to damaged property.

Other deleterious effects of dogs on human health are difficult to determine as data are limited. Canine faeces and rectal swabs are not collected routinely, and reporting by veterinary practitioners to bacterial laboratories is variable. Many dogs carry human pathogens: at least half *Pasteurella multocida* (estimated to cause 31 000 episodes of wound sepsis in England and Wales); half enteropathogenic bacteria, mostly *Campylobacter* but also *Salmonella* and *Yersinia* (13 000 enteritis episodes); and 10% *Toxocara canis* (16 000 new toxocara infections a year). Around 9000 episodes of human ringworm attributable to dogs occur each year.

Even without any formal statistical information the extent and amount of dog excreta are obvious to most town dwellers. One estimate for an average day deposit of 6 million dogs was 4½ million litres of urine and 1 million kilograms of faeces, equivalent to the urinary output of 3 million humans and the faecal output of 10 million—pollution on a grand scale.<sup>4</sup>

Some of this could be prevented if all dogs had to be both licensed and vaccinated. At present only about half of dogs are licensed, despite the unrealistic dog licence fee of 37½p (since 1878), which has recently gone down (very slightly) to 37p. Indeed, the Department of the Environment loses money on the licences; the Post Office is paid £3·4m for the cost of them, while the annual revenue is only £0·9m. In 1976 a working party on dogs recommended that the annual licence fee should be increased to £5 (which at today's prices might more reasonably be £10), that the control of stray dogs in Great Britain should be transferred from the police to local authorities, and that local authorities should consider setting up discretionary dog warden services.<sup>6</sup> None of these recommendations was implemented, and governments seem loth to take positive action (despite critical comments by the Committee of Public Accounts in 1982).<sup>7</sup> I believe that certification and evidence of vaccination and deworming should be mandatory when initially licensing a dog. The licence fee should be increased to a realistic level and renewed annually with appropriate fines for failure to comply. It might be desirable to have the dog licence number on the dog collar to simplify dealing with stray dogs.

Education and training of dogs and their owners could also reduce health hazards. In parts of the United States it is mandatory for owners to clear up their own dog's excreta ("pooper-scoopers" are supplied and fines imposed if not used). The British government has recently given approval to bylaws requiring dog owners to clear up faeces left by their pets on pavements, parks, and recreation grounds. A 12 month pilot scheme will be tried in four areas starting in September 1985.<sup>8</sup> Responsibility for a dog requires an owner to be mature (perhaps over 16), caring, and willing to ensure that the dog is adequately trained, not unhygienic, and not hazardous to the public's health.

The harm that dogs cause to both health and safety causes appreciable costs to the nation.<sup>2,4,9,10</sup> Some of this could be prevented or ameliorated if the government was prepared to insist on more responsible attitudes by dog owners. The ever present risk of rabies crossing the English Channel is a further cogent reason for seriously considering better control of dogs.

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## Failure of communication

The latest call for the public to become better informed about science comes from the Royal Society, whose report by a committee chaired by Dr Walter Bodmer was published last week.<sup>1</sup> Sadly, however, the report is likely to make as little impact as its predecessors; the time and money would have been better spent in finding a new approach to an old but vital problem. For the continuing low status given to science and technology by our society is surely one of the main factors in Britain's economic decline.

The report emphasises the universal importance of understanding science, its accomplishments, and its limitations. Research should be carried out into the public's understanding of science and technology, how to improve this, and how to monitor attitudes to science. All schoolchildren should have a broadly based science education, special attempts should be made to attract good and dedicated teachers, and new approaches to continuing and further science education should be developed. The attitudes of the mass media need to be changed, with more science in general television programmes and newspaper articles and a more positive attitude by newspaper editors. Industry, learned societies, and other scientific institutions should jointly promote activities aimed at improving public understanding of science.

Thus summarised, the report sounds dull—but the reality is much, much duller. It ignores its own "most direct and

urgent message": learn to communicate with the public, be willing to do so, and consider it your duty to do so. Such failure of communication is not due to the unattractive format alone, though the excessive use of bold type for emphasis and a line that is too wide to be read comfortably break the elementary rules: rather it is the stilted structure, with its apparatus of numbered paragraphs and annexes, and the continual use of pompous language, clichés, and platitudes that would make the uncommitted reader give up early on.

Government needs to appreciate, for example, the interconnections between basic, strategic and applied research, the relative timescales and uncertainties of these three phases, special factors such as increasing instrumental sophistication that affect the cost of research, and the dynamics of the system for financing research in the higher education sector.

A third corollary is that this view of scientists as purely logical and unemotional not only detracts from a balanced view of the scientist as an ordinary person but may also preclude recognition of the imaginative and humanistic aspects of the scientific endeavour.

The progress of scientific understanding, the changes in the scientific and technological basis of industry and the increasing involvement of the public in national decision making mean that education given early in life, while providing the basis for an individual's future ability to acquire scientific knowledge, cannot itself suffice for a lifetime.

If prose of this banality is typical of most committee reports, and in my experience it is, then no wonder that the Bodmer committee's approach to newspaper editors to give evidence evoked no response (with one exception, *The Guardian*)—an aspect which crucially the report fails to explore.

Citing C P Snow's "two cultures," an editorial in *Nature* (which views the report as valuable and liberal) emphasises that the failure of academic scientists to communicate is thoroughly unwelcome.<sup>2</sup> In justifying my harsh comments I would use another of Snow's phrases: "with characters big enough one ought not to be polite."<sup>3</sup> For not only are the characters here big enough, but the problem is too important for yet another document to be nodded over by committee members who have neither read it nor will do anything to implement its recommendations. In particular, in Britain medicine has been ill served by the press, one reason why the *BMJ* introduced its "Medicine and the Media" column to monitor its comments.

The research that needs doing is how to make laymen, members of parliament, and journalists realise that their understanding of science is inadequate and that it must be improved. Repeated recommendations in formal committee reports will not achieve this: individually many members of the Bodmer committee are expert communicators (indeed, at least two of them write superbly); collectively they have produced something as palatable as a lettuce left next to the boiler over a weekend. The priority is to discover why television handles science better than the newspapers, why news editors continue to ignore science (except in terms of "new cancer virus breakthrough"), and how attitudes can be changed.

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