INTERNATIONAL CHARTER FOR HEALTH AND HUMANE RESEARCH

Introduction

Every year millions of animals suffer and die in the world's laboratories. Yet many people are convinced that it is unjust to expose any sentient and unconsenting individual to suffering, or the risk of suffering, when the only potential benefit would be to others. Such ethical considerations are strongly reinforced by mounting evidence that animal research is an unreliable means of studying, treating and curing human illness, and – as history shows – can prove dangerously misleading as well. This is vividly illustrated by the serious unforeseen side-effects associated with many animal-tested medicines. The problems arise because animals are different to people both in the way their bodies work and in their reaction to drugs. All too often experiments on animals not only produce the wrong answers but divert attention from more reliable sources of information based on the study of humans.

For all these reasons we believe that medical research should concentrate its resources on methods of more direct relevance to people. In the urgent interests of both humans and animals we therefore propose the following programme for health and humane research. This programme, summarised in the seven points below, sets out a positive framework on which to build a new approach to health which would lead to an end to the current obsession with animal research

1) Emphasis to be directed towards the prevention of ill health

2) An essential drugs policy restricting new medicines to therapeutic areas of real need, thus avoiding the production of duplicate "me too" drugs for which there is no medical justification.

3) Medical research to rely on methods of direct relevance to people.

4) Medical training to concentrate on the study of human beings.

5) A switch to non-animal test systems to improve the safety of medicines.

6) Vaccines to be produced from human rather than animal cells.

7) Government to ensure the rapid development, validation and utilisation of alternative systems

Preventing Ill Health

History shows that the dramatic increase in life-expectancy experienced by many countries over the past 100 years is chiefly due to improvements in nutrition, living and working conditions, hygiene and sanitation, with specific medical measures such as drugs and vaccines having a comparatively marginal effect.[1] The vital contribution of public health measures in preventing disease is clearly seen by comparing the higher death rates not only in Third World countries[2] but within poorer sections of affluent nations.[3]

The improvements in public health were based on human epidemiological studies. These revealed that people who lived in dirty, overcrowded and unsanitary conditions with little food or clean water were much more likely to die of infectious disease. Today, the main killers in Western society are heart disease, cancer and stroke,conditions which are often difficult or impossible to cure. However, by monitoring different groups of people, epidemiologists have again identified the chief risks and shown that these diseases are also largely preventable.[4]

In the case of heart disease, the results have been dramatic. Since the 1960s when the United States had one of the highest death rates for coronary disease in the world, mortality has fallen sharply, in line with changes in diet and lifestyle. Specific medical measures had only a small impact, at best.[5] Similar results could be achieved with cancer where 80-90% of fatal cases are potentially preventable. The culprits include poor diet, smoking, alcohol, radiation, pollution and occupational hazards such as asbestos.[6]

The evidence suggests that the main influences on our health – diet, lifestyle and the environment – are outside the scope of laboratory experimentation. It follows that major advances in health can only be achieved by putting the greatest emphasis on prevention.

Essential Drugs Policy

The fact that animal tests are an unsafe guide to drug safety ought to be a strong incentive to restrict new medicines to those for which there is a clinical need, so that hazards can be minimised. Yet an analysis of new medicines introduced onto the world market over a recent ten year period reveals that over 70% offered no therapeutic improvement over existing products.[7]

Medicines which offer little or no improvement are referred to as "me too" drugs and are usually developed because they are a good financial investment. They are considered to have no major advantages over existing products. They also keep drug prices high and confuse doctors faced with a choice of many drugs all doing the same thing.[8] Britain's prestigious Drug and Therapeutics Bulletin states that "the existence of many apparently similar preparations seldom increases therapeutic options but greatly increases the risk of unwanted effects". The Bulletin concludes that the use of a smaller number of medicines should increase the knowledge of their real benefits and hazards so leading to safer prescribing.[9]

The adoption of a national medicines policy based on the world health Organisation's concept of essential drugs[10] could bring a dramatic reduction in drug-increased disease whilst the financial savings could be used more productively to increase the proportion spent on disease prevention. The WHO has issued a list of around 250 basic drugs to treat the majority of the world's diseases.

Medical Research

Critics of animal experiments argue that vivisection is bad science because it tells us about animals when we need to know about people.[11] This is because human disease can take an entirely different form in animals due to physiological and biochemical differences between the species. For instance, although rats and mice constitute 98% of the animals used for cancer research, it is acknowledged that they have a poor track record in predicting clinically useful treatments.[12] One survey found that for every 30-40 drugs effective in treating mouse cancers, only one will work in people.[13] Another example is the failure to induce AIDS in laboratory animals by inoculating them with HIV.

In view of the differences between species, it would indeed be surprising if animal research had contributed greatly to our health. In fact most major advances derive from human studies, methods that are directly relevant to people.[11] These include epidemiology, where clues about disease and its prevention come from comparing the health of different groups or communities; clinical observation of patients who are ill or who have died, an approach vital to the discovery of new treatments; and studies with healthy volunteers which are essential for understanding how the body works.

Much research can be carried out in the test tube and almost any useful drug effect can be idetified in this way using cells, tissues and enzymes from the body.[14] Whilst these often originate from animals killed for the purpose, human material could be used to advantage. Tissues can be obtained from volunteers, biopses, surgical waste and post mortems. An example is the development of anticancer drugs using tumor tissue from patients. Computer simulation of biological systems can also aid drug discovery: based on the idea that medicines must be the correct shape to trigger their effects on the tissues, scientists are employing computer graphics to design new treatments.

Medical Education

The basic rationale behind animal experiments is that lives can only be saved by sacrificing others.[15] The use of animals in medical training inevitably reinforces this primitive view with the danger that doctors may become desensitized to suffering in their human patients. It is reported that Canadian neurologist who chose to spend a year of their training experimenting on animals, had so hardened themselves to animal suffering that they were incapable of recognising suffering in their patients for quite a while after returning to clinical work.[16]

The use of animals is not only undesirable but unnecessary, and in the United States, animal laboratories are no longer required by any civilian medical school for teaching purposes. In some of these medical schools the use of animals is optional; in others the procedures have been discarded altogether. Surgeons traditionally learn their basic skills by work with human bodies in the mortuary, then by observing senior surgeons at work, and finally by operating under the close supervision of experienced colleagues.

In the case of microsurgery, pioneering work at Britain's Frenchay Hospital in Bristol has led to the development of the normally discarded human placenta as an alternative to animals.[17] The placenta contains tiny vessels which can be sewn together as a means of practice.

Animals are sometimes used to illustrate the effects of drugs but there are many sophisticated video recordings and computer simulations which can be used instead. Such alternatives can give a higher standard of learning performance than work with animal tissues.[18] Ultimately whatever "alternatives" are available , medical students will acquire far more relevant information by the careful observation of human patients, as Hippocrates taught.

Safety of Medicines

*Comparisons between human and animal test data show that most drug side-effects occuring in people cannot be predicted by animal experiments.[19] Reliance on animal tests as a guide to safety can therefore be dangerously misleading. For instance, Opren and Eraldin are examples of animal-tested drugs withdrawn from the British market after serious, and in some cases fatal, side-effects in patients.[20] **The Lancet** medical journal acknowledges that "animal tests are very imperfect indicators of human toxicity," and goes on to say that "only clinical experience and careful control of the introduction of new drugs can tell us about their real dangers."[21]*

*Whilst clinical trials are the most valid test of a new medicine, some preliminary testing using humane alternatives is essential to identify the most toxic substances. In fact hundreds of test tube methods have been developed for the purpose. These include bacteria to test mutagens and carcinogens, yeast to measure phototoxicity, and human tissues to predict skin and eye irritancy. Indeed, tests **with** **human** **tissue** promise better protection since results are directly relevant to people. For instance, chloramphenicol, phenylbutazone, mianserin and thalidomide are examples of medicines whose harmful effects can be identified by human tissue tests but were missed by the original animal experiments.[22] As researchers at Britain's Lister Hospital point out, these tests give a degree of reassurance not provided by experiments on animals.[23]*

Human tissue tests can be supplemented by advanced theoretical techniques which use computer programmes to predict a new drug's toxicity on the basis of it's chemical structure. This approach compares the molecular shape of the test substance with that of drugs and chemicals whose toxic effects are already known.[24]

Vaccine Production

Vaccines against diseases caused by viruses have traditionally been made from animals. This has often proved a dangerous approach as contaminants from animal tissues have produced fatal results in people. For instance, in 1967 a previously unknown virus - the Marburg agent - killed 7 people handling monkeys or their tissues for vaccine production.[25] In 1972 Stanford University vaccine researcher Leonard Hayflick pointed out that hundreds of thousands of people had been inoculated with SV40 virus found in polio vaccine made from monkey kidney cells. It is thought the SV40 virus can cause cancer.[26] The preparation of vaccines using cells from dogs, chicks and ducks is also thought to be hazardous as cancer-causing viruses have been found in each case.[25]

The cancer-causing viruses such as SV40 which contaminate tissues from primates, only become dangerous when they, cross the species barrier[25] so the use of human cells to make human viral Vaccines must be the safest approach Today vaccines for many viral diseases including polio, rubella, measles, smallpox, rabies and diseases caused by arboviruses such as yellow fever; can all be produced safely from test tube cultures of human cells. In Britain, Sabin's polio vaccine is made from human cells[27] yet despite the dangers, most of the polio vaccine used throughout the world is still derived from African green monkeys and in some countries from rhesus monkeys.[28] And although Salk's polio vaccine is traditionally made from monkey kidney tissue, research by the National Bacteriological Laboratory in Stockholm shows that this too can be produced from human cells[29]

Incentives for Reform

Those who defend vivisection claim that without animal experiments, research would grind to a halt. Yet experience shows this is not the case because scientists quickly devise new techniques to achieve their objectives. For instance, Britain's former prohibition on the use of animals to practice microsurgery, led to the development of human placental tissue as a viable substitute.

Developing humane technologies depends very much on attitudes prevalent within the scientific community, and some tests continue long after they are considered essential because scientists do not feel strongly about the unnecessary loss of life. Although public pressure has been partially successful in persuading companies to adopt alternative strategies, there is much that governments can do to stimulate positive attitudes. Even if unwilling to immediately prohibit animal experiments, they can set target dates after which specific tests would no longer be permitted; they can mandate a continuing and substantial annual decline in the use of animals and they can insist that drug companies improve safety profiles by always subjecting new product to human tissue tests. At the same time government funding agencies can provide incentives by giving priority to grant applications featuring methods of direct relevance to people, such as clinical, epidemiological and human tissue studies. And by, establishing national, co-ordinated networks of tissue banks, they can overcome the shortage of human material for research and testing.

But the alternative to many experiments is simply not to embark on the research in the first place. The development of genetically engineered (transgenic) animals, for instance to improve farm animal productivity, is unwarranted because health studies stress we should be reducing our intake of animal products. And the use of pig or monkey organs for human transplant operations should be halted to avoid the possibility of animal viruses producing deadly new plagues.[30]

It is clearly in the interests of humans and animals that vivisection is stopped so the energy and skill of scientific investigation is directed into better and safer channels. Only then can we expect medical science to achieve its full potential.

References

1. T. McKeown, The Role of Medicine,(Blackwell, 1979).
2. The Lancet, 1974, 14 September, 632.
3.Inequalities in Health - report of a working group, Department of Health and Social Security (UK), 1980.
4. For instance, in the case of heart disease see: A Stewart-Truswell, British Medical Journal, 1985, 6 July, 34-37; for cancer see: R. Doll, Nature 1977, 17 February 589-596,
5. S. Pell & W. Fayerweather, New England Journal of Medicine, 1985, volume 312, 1005-1011
6. R. Peto & R. Doll, The Causes of Cancer, (Oxford University Press, 1981).
7. Scrip, 1985, 23 December, 20-21.
8. New Internationalist, 1986, November 6.
9. Drug and Therapeutics Bulletin, 1986, 23 March.
10. Editorial, The Lancet, 1990, 28 August, 1003-1004.
11. R. Sharpe, The Cruel Deception - the use of animals in medical research (Thorsons, 1988) and references therein.
12. A. Pihl, International Journal of Cancer,1986, volume 37, 1-5; see also ref. 11.
13. D. D. Von Hoff, Journal of the American Medical Association, 1979, 10 August, 503.
14. N. R. Farnsworth & J.M. Pezuto, Lord Dowding Fund Bulletin, 1984, No. 21, 26-34
15. C. Bernard, An Introduction to the Study of Experimental Medicine, 1865 (translation of the original 1865 text by H. C. Green - Dover Publication Inc. 1957).
16. D. A. Howell, British Medical Journal, 1983, 11 June, 1894.
17. P. Townsend, Lord Dowding Fund Bulletin, 1985, number 23 6-8.
18. M. C. Henman and G. D. H. Leach British Journal of Pharmacology, 1983, Volume 80,591 P.
19. R. Heywood in Animal Toxicity Studies: Their Relevance for Man, Eds. C. E. Lumley & S. R. Walker (Quay Publishing, 1990).
20. Eraldin, see for example F. H. Gross and W. H. Inman (Eds.), Drug Monitoring (Academic Press, 1977). Opren, see British Medical Journal, 1982, 14 August, 459-460. See also ref. 11.
21. The Lancet, 1972, 22 April, 887.
22. R. Sharpe, Science on Trial, (Awareness Publishing l994); J. W. Lash and L. Saxen, Nature, 1971, 27 August, 634-645.
23. G. M. L. Gyte & J. R. B. Williams, ATLA, 1985, volume 13, 38-47.
24. For instance, see D. V. Parke et al, ATLA, 1990. volume 18, 91-102.
25. L. Hayflick, Laboratory Practice, 1970, volume 19, 58-62.
26. L. Hayflick, Science, 1972, 19 May, 813-814
27. Letter from Wellcome Research Laboratory dated 2 September, 1982 to Dr. Robert Sharpe.
28. A. J. Zuckerman, British Medical Journal, 1986, 18 January, 158.
29. B. Larsson and J. Litman, Developments in Biological Standardisation, 1980, volume 46, 241-247.
30. Editorial, New Scientist, 1993, 30 January.