Essentials of clinical pharmacology for education and research in developing countries

Most academic departments of clinical pharmacology in the U.K. have at some time or another accepted overseas postgraduate students for training purposes and will therefore be acquainted with the problems that can arise in trying to design and organize a suitable training programme. But few attempts have been made to review systematically these difficulties and to try to lay out guide lines for future training. Therefore a Workshop involving clinical pharmacologists from developed and developing countries which took place at the Ciba Foundation, London, in January 1984, under the auspices of the International Union of Pharmacology and the Clinical Section of the British Pharmacological Society is of some note.

Laurence & Bennett (1980) have argued that 'no medical school can be considered complete without a department or subdepartment of clinical pharmacology'. Regrettably, a few medical schools in the U.K. are still incomplete, but what of the schools in developing countries? There are few clinical pharmacologists and very few departments of clinical pharmacology (WHO, 1970; Fraser 1981), yet the importance of constructing national drug policies, of promoting rational drug use through effective undergraduate and continuing education, and of initiating relevant basic and clinical research is particularly great in developing countries. In much of the developing world, medical schools have been established comparatively recently, and their lack of clinical pharmacology departments leads to a deficiency of teaching both at an undergraduate and postgraduate level. This state of affairs will continue until positive efforts are made to correct the deficiency.

The first priority is to define a realistic clinical pharmacology component in the undergraduate teaching programme for developing countries, and the second is to identify and train physicians to provide such teaching and to fulfil the other duties already mentioned.

The undergraduate teaching of clinical pharmacology should not be identical to the teaching in the developed countries. On qualifying, the physician may have access to a limited formulary of drugs and drug costs become of even greater importance. Emphasis should therefore be placed upon these factors

throughout the medical course as well as in Finals examinations. In this respect, the presently available textbooks of clinical pharmacology are not ideal for the developing world. Consideration should be given to making available teaching materials which reflect these differences. Such materials might most usefully be organized on a modular basis to make them more flexible and therefore applicable to regional variations in prescribing and disease patterns and availability of drugs. The relevance of clinical pharmacology to clinical medicine can best be transmitted to students by practising physicians who have had a well rounded training in clinical pharmacology, and such individuals would also benefit from specific training in medical teaching and communication skills.

The lack of such trained clinical pharmacologists is likely to lead to a continuing dependence on the developed countries for at least the next decade while trainees acquire the skills that they require and return to their own countries to set up departments and develop postgraduate courses of their own. But this present dependence upon Western medical schools means that there must be a clear understanding both on the part of the sponsoring body and the host institution about the purpose and limitations of the training programme. Too often the postgraduate student arrives to find not only cultural and educational differences which he has to adjust to, but also that the requirements of the higher degree, which his government has indicated that he must acquire, demands that most of his next three years is spent in a very narrow area of research, perhaps involving the use of sophisticated research equipment which is not available in his own country. He may therefore return with none of the broad and simple skills that are essential if he is to persuade his other colleagues, administrators and governmental bodies that clinical pharmacology must in the future play an important part in medical education and health care development. There must be a dialogue between the sponsor and host on exactly what components are necessary. The sponsor may need to have it explained to him that studying for a Ph.D. in drug metabolism in the U.K. may not be the best way of training a doctor to develop local drug formularies or

carry out a clinical trial of a herbal remedy on his return home. On the other hand, host institutions should be more aware that they are not training a researcher to fit into the academic hierarchy of a Western medical school, and should not regard him as just another pair of hands in the research laboratory.

What are the requirements of training? Clearly these will be dependent upon the needs and health care system of the sponsoring country, but they are likely to include a knowledge of most of the following: pharmacokinetics, effect of disease on drug response, clinical trials methods, adverse drug reaction monitoring, drug information services, management of drug overdose, drug utilization and regulation, development of local and national formularies, general drug policies, new drug development, and the pharmaceutical industry. In addition, there may be a need for initial help with the language of the host country, and the student may at some stage require some post-graduate training in clinical medicine. Opportunities to train in, and subsequently to practice, communications skills during training would also help the trainee to fulfil the educational role which will be demanded of him. Some might need a tropical diseases bias in the course. There are few centres in which this wide range of topics can be taught by experts, and it is essential that trainees have 'hands-on' experience. Perhaps a collaborative training programme between two or three centres might be the most satisfactory approach, each covering areas where they have a special expertise. In this way, the trainee will be exposed to a variety of opinions and approaches towards clinical pharmacology from which he can choose those that best suit his home needs.

Who should train in clinical pharmacology? Should it be the young able graduate who can absorb new ideas and develop original lines of work? Although this might be attractive from the academic point of view, the young graduate may find himself with insufficient muscle when he arrives back home to create the circumstances whereby his ideas can be developed. Perhaps some, at least, of the trainees should be more senior doctors who already have a sound understanding of local needs and who are in a position to make decisions. A mix of these two types of individual should provide the best chance of success, but all should be good communicators if they are to influence their colleagues when they return.

It is important that the trainee has a career appointment to return to after completing his course of training, and that he is able to work

under less than ideal conditions and has access to adequate facilities on his return. Perhaps one way of ensuring this is to arrange that he has automatic access to a re-entry grant so that he can quickly develop a unit in which he can set up techniques that he has learned and provide a base from which he can teach other local candidates. Continuing support from his overseas supervisor would at this stage give continuity to the developing programme, and occasional exchanges of staff in both directions would facilitate this cooperation. It might be argued that this exchange should begin at a very early stage in the training programme, and that the trainee spend part of his course back in his own country under the auspices of the staff of the overseas training centre along the same lines as many university and technical college 'sandwich' courses are run. In this way, the supervisors will acquire a closer understanding of local needs and can then tailor their course accordingly.

A collaborative programme of this sort would clearly enable research projects to get off the ground much more quickly. The host institution could provide the high technology that may be required, e.g. to measure plasma drug concentrations, while the trainee can collect material in the field. The area of research should be relevant to local needs, but this opens up many avenues that have been, so far, little explored because clinical pharmacology in developed countries has different priorities. The clinical pharmacology of tropical diseases or the effect of malnutrition on the disposition of drugs are two obviously relevant areas, and there are examples where programmes have been successfully developed, e.g. the WHO onchocerciasis programme, and the collaborative work on tropical diseases between Liverpool and Ghana. Orthodox medicine reaches only about one third of the population in many countries and the clinical pharmacologist may need to devote himself as much to the assessment of traditional plant medicines as to modern synthetic chemicals. The first requirement in assessing these medicines is well-conducted clinical trials rather than laboratory studies aimed at trying to detect an active ingredient that might account for the claimed but unproven therapeutic effect.

There can be no doubt that the need for clinical pharmacology in the developing countries is as great as, if not greater than, in Western society, and Governments should look carefully at ways in which this can be achieved by suitable training courses for carefully selected candidates.

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