Clinical pharmacology, therapeutics and geriatric medicine: an interaction of importance

'Therapeutics in the elderly. Isn't that rather narrow?', said the clinical pharmacologist. The geriatrician said that one should come and tell them about 'your therapeutics'. The medical director from the pharmaceutical industry said 'Into which camp do you fall?', consulting his company's lists of geriatricians and of relevant organ-based specialists. The administrator said 'Oh yes, this is clinical pharmacology and therapeutics, and this geriatrics', drawing two circles with a 5% overlap which would occur by chance. Does then clinical pharmacology and therapeutics still exist as a particular philosophical system with its own code of practice and methodologies, which may encompass any medical specialty including geriatric medicine? Putting people into metaphorical boxes can be just as damaging to progress as can that last refuge of the prejudiced: 'too broad' or 'too narrow'. Where clinical pharmacologists can best be deployed depends on their own vision and insights, and the scope for interaction in the world around them. However most at one time or another have suffered an identity crisis, and publicity (Collier & Herxheimer, 1991) can be of no use to one who doesn't know his own identity. The specialty must surely come to itself in the 1990s (Breckenridge, 1991), and instead of asking 'Whither goest clinical pharmacology?' announce what its members can do to help re-establish clinical research in any particular specialty (Weatherall, 1991).

Then there is the argument of whether or not to include therapeutics in our title. Should we stand apart unblemished as clinical pharmacologists, or should we muck in and apply our discipline to interventions of all natures? From the standpoint of geriatric medicine at least such a question is risible. There is no doubt that drug effects can be important in the old, and can make the difference between independent living and institutionalisation, but their benefits may be outweighed by warmth, food and company. If one estimates perhaps generously that 30% of the drugs prescribed are effective, then we may need in the old to qualify efficacy by accepting say a 10 or 20% narrowing of whatever deficit exists, whereas in a younger subject it may be totally reversed. The truly enthralling aspect of drug usage in the old lies in the multifactorial determinants of response. In these patients with failing homeostatic mechanisms a beneficial response on one system may be counterbalanced by a negative effect on another. Without pharmacodynamic and, where appropriate, kinetic modelling of the whole problem, the potential benefits of the drug cannot be optimised. We might as well throw in our medical, let alone our scientific, hats and simply become carers. The normal ageing process itself needs to be examined. How much is reversible and how much preventable by identifying adverse environmental influences? We should also be putting more effort into defining pre-morbid states and the prophylaxis of these.

This may save resources which would have to be spent at a later date in dealing with disability, for example as a result of falls and fractures. There is no doubt whatsoever that thoroughgoing rationalisation of drug usage in geriatric medicine is needed. If we are to make an impact, then we must stop pussyfooting round the periphery doing pharmacokinetic studies on emeritus members of the department as an end in itself, and tackle the real problems. What seems to be the perfect pharmacokinetic adaptation of a drug regimen to the elderly, may, from a dynamic point of view, not even have addressed the problem.

The clinical pharmacologist needs to cast off professional conservatism. It would be hypocritical to call geriatricians conservative, since they have already brought about a major revolution in turning custodial care into rehabilitation. However who would not feel daunted by the further revolution required to set geriatric medicine on a firm scientific footing of its own, and by the need to re-examine the second-hand science which has infiltrated from other adult specialties? The excellent memory for lists which has fared so well in clinical medicine, or at least in post-graduate examinations, is not required when dealing with *drug efficacy* in the old. We have remarkably little solid information. We do have very long lists of *adverse reactions* to drugs, and remarkable statistics on their frequency, but surely this is not the object of the exercise.

A hurdle in the way of this revolution is a feeling among geriatricians that the clinical pharmacologist may impose arbitrary and often unrealistic expectations of benefit on his aged patients, and adopt outcome criteria which are not relevant to daily living. Indeed, the clinical pharmacologist may not find methods appropriate for use in the aged in his existing armamentarium. Moreover, geriatricians have been more interested in subjective assessment and in developing multidisciplinary systems of care than in quantification. Haemodynamic or biochemical assessments may go hand in hand with quantification of disability, but are not in themselves such major outcome criteria in old age as in younger patients. On the other hand global scores tend to be insensitive to treatment effects in the old.

The willingness of old people to cooperate in formal studies is generally overwhelming. However many are physically and/or mentally frail, and in the investigation of their illness and disabilities freedom from encumbering instrumentation and trailing leads would be advantageous. Tethering can produce an anxiety state even in the mentally sound. If greater objectivity of assessment is to be acceptable to the frail aged patient, the inconvenience and discomfort associated with monitoring must be minimal. The measurement should not interfere with performance, and its relevance to daily living should be obvious to patients in order to secure their

cooperation. Telemetric methods seem especially applicable to these patients (Weller *et al.*, 1991). However apart from one particular application using telecommunications in alarm systems, there has been little interaction between geriatric practice and biotelemetry. By contrast, in cardiology objective assessment and quantification have always been given a high priority. The electrocardiogram, blood pressure and blood flow within major vessels have all been telemetered by radio and relayed by telephone lines and satellite. Storage methods have had the greatest impact, enabling data to be downloaded and analysed in accelerated time. There may of course be difficulties with data handling. The amount of data yielded by continuous or long-term monitoring may be beyond the resources available, in terms of personnel, hardware or software, for its interpretation.

Historically geriatric medicine has been under-resourced, but care of the elderly is now an emotive political issue. Isolation in geriatric practice may have contributed to a lack of awareness of the benefits of biotechnology and to a reluctance to regard technological innovation as relevant. High technology in medicine, and even a scientific approach, is seen by

some as mitigating against a caring attitude. Advancement may also be limited by lack of commercial interest, and the perceived lack of status or 'glamour' of this particular medical specialty.

Our general conclusion is that the frail, aged patient can be enrolled in pharmacological studies obviating the need for misleading extrapolation from younger or fitter subjects. With appropriate collaboration in design and selection of appropriate tools and methods, outcome criteria can be as precise as in any *in vitro* pharmacological experiment. Physicians involved in caring for the aged take on the responsibility for prescribing a wide range of medicines in this sub-group of great pharmacological interest and importance. For those interested in clinical pharmacology, therapeutics and biotechnology, here lies a unique opportunity for beneficial interaction.

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