

Editors' view

Clinical Pharmacology: Past, Present, and Future

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Study the past, if you would divine the future

K'ung Fu-Tse (attrib), *Analects*

Past, present, and future

This year we celebrate the 75th anniversary of the British Pharmacological Society, which was established in Oxford in 1931 [1]. Our sister journal, the *British Journal of Pharmacology*, contributed to the celebrations earlier this year by publishing a special issue [2]. Here the *British Journal of Clinical Pharmacology* adds its own voice.

This special issue begins with a personal view, from Professor Sir Colin Dollery, of the history of clinical pharmacology over the last 75 years [3], to which he has contributed so much. But his view is not merely backward looking. In a section entitled 'Present concerns, future hopes' he points to current problems and suggests ways forward.

He starts by outlining a fundamental problem – defining the role of clinical pharmacology. He suggests that it is not simply a laboratory discipline dealing with biomarkers, pharmacokinetics, drug metabolism, and genetics based on human samples; not simply a desk discipline dealing with design and evaluation of clinical trials, drug utilization on a local and national level, clinical guidelines for drug use, and pharmacovigilance; and not simply a hands-on clinical discipline dealing with patient care, experimental medicine studies of old and new drugs, clinical investigation of adverse reactions and interactions, and consultancy services to other clinicians who have drug problems. It combines all of these.

But this very breadth and depth of interests and involvement constitute at the same time a weakness and

a strength. Its weakness is that as a laboratory discipline, clinical pharmacology has to compete with pharmacologists and other basic scientists; as a desk discipline, it has to compete with epidemiologists, statisticians, economists, and policy makers; and as a clinical specialty, it has to compete with other clinical specialists, including nurses and pharmacists. Its strength lies in the fact that the clinical pharmacologist can pull all these strands together into a single tapestry 'of rich and varied hue'.

Of course, it is difficult for any one individual to cover the whole waterfront (to change the metaphor [4]) and to be equally expert in the laboratory, at the desk, and at the bedside. Each aspect in itself deserves a lifetime's attention. But the integrative aspects of the discipline are rewarding and important to the proper development, testing, and practical use of medicines, both old and new. It has been possible in the past to mitigate the difficulties posed by such breadth and depth of interests by creating environments in which groups of specialists with varied skills could interact. However, in recent years, funding such activities has become increasingly difficult, even in pharmaceutical companies. The numbers of academic clinical pharmacologists have fallen, at a time when all other clinical specialties have grown [5], and the original hope that clinical pharmacologists would populate district general hospitals [6] has not been fulfilled. Although clinical pharmacologists are in great demand as teachers [7], and although their advisory and editorial services are harnessed by a variety of sectors, including governments and pharmaceutical companies [6], there has been little assessment of how

those services contribute to improving health; the activities by which they are judged when it comes to funding relate mainly to research. With recruitment to academic medicine as a whole becoming increasingly difficult [8,9], clinical pharmacology finds itself struggling to attract new young recruits, and, in the UK at least, the increasing telescoping of clinical training makes it even more difficult, since clinical pharmacology is the only discipline in the UK whose training programme includes a substantial element of research, which prolongs the process.

But Dollery is not pessimistic. He lists several options for consolidating the current skill base in clinical pharmacology and expanding it. Here are his headlines:

- Developing experimental or translational medicine: the UK Clinical Research Collaboration.
- Service support of pharmacotherapy.
- Re-integration of pharmacology.
- Reviving the teaching of clinical pharmacology to medical students and practising doctors.
- Contributing to personalized medicine.
- Shortening the training of clinical specialists.

Under these banners he points out the uniquely broad capabilities of clinical pharmacologists in providing the integrative skills necessary for translational research and for bringing basic sciences to the bedside, and the huge contributions that they can make to the health of the nation by improving the effective and safe use of medicines, through practical activities and teaching, and potentially through what has become known as 'personalized medicine'. His message about the re-integration of pharmacology is echoed elsewhere by the sentiment expressed by Vallance and Smart [10] that there should be more integration of basic pharmacology and clinical pharmacology, a sentiment that I strongly support.

Past and present – a Chinese perspective

This year the 15th IUPHAR World Congress of Pharmacology will be held in Beijing, and as a tribute to our hosts we have included in this issue articles that have Chinese relevance. Immediately after Dollery's article comes a different historical perspective. Elizabeth Hsu, a medical anthropologist, highlights the work of Ge Hong, a fourth century Chinese physician, whose text *Emergency Prescriptions Kept up one's Sleeve*, in which the use of qinghaosu was described, was influential in the modern discovery of artemisinin derivatives in the treatment of malaria [11]. Ge Hong is depicted on the cover of this issue, and next to him the flowers of *Artemisia annua*; past and present in close juxtaposition. Ge

Hong's insights show him to have been a high-class clinical pharmacologist in all but name. And Hsu's text demonstrates the importance of pharmacognosy, ethnopharmacology, and applied clinical pharmacology in this discovery.

Present and future

The rest of the articles in this issue, bar one, are in pairs. In each case an original paper that was available for publication in the print version of the *Journal*, describing current research, has been matched with an article whose authors reflect on possible future developments in the field. Chinese medicine figures here again, in articles on drug interactions with herbal medicines, malaria, diabetes mellitus and the metabolic syndrome, and the pharmacogenetics of anticoagulation. Other topics include paediatrics, cardiac stem cells, non-steroidal anti-inflammatory drugs, sleep and sedation, oxidative stress, and pharmacogenomics and personalized prescribing. The last of these provides us with our third cover illustration – a picture of a commercial bead-array chip, the size of a microscope slide, which allows over 300 000 HapMap single nucleotide polymorphisms to be genotyped in a single hybridization step. The future writ large, or perhaps one should say small.

We end the issue with a futuristic piece on the Internet as a tool in clinical pharmacology. We have no research paper with which to pair this article, but we look forward to receiving papers describing original work on the subject.

Conclusions

It has recently been suggested that academic medicine is failing patients, by neglecting observational clinical research [12]. Clinical pharmacology is well equipped to fill this gap, and indeed its history shows that it has been filling it since its inception. Dollery's comments about the current state of clinical pharmacology in the article that opens this issue of the *Journal* [3] are heartening: 'For a discipline held to be in decline, demand for its services in the pharmaceutical industry, government regulatory agencies, and assessment bodies is remarkably robust.' The other contents of this issue bear witness to the current robustness of the discipline. Dollery's suggestions for the future should be read carefully.

References

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