The European Association for Clinical Pharmacology and Therapeutics-25 years' young and going strong

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SPECIAL ARTICLE

The European Association for Clinical Pharmacology and Therapeutics—25 years' young and going strong

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Abstract

Clinical pharmacology as a scientific discipline and medical specialty was unarguably born in the twentieth century. Whilst pharmacology—the science behind the treatment of disease—had been in evolution since at least medieval times, the clinical discipline of pharmacology has had a more recent genesis and rather insidious evolution. During the 1900s, there were some clear father (parent) figures of clinical pharmacology in Europe that emerged and were responsible for the development of the specialty in this continent. This was a time when there were parallel developments in geographically dispersed academic departments (around the globe), during an age of excitement in drug discovery and clinical application of new therapeutic agents. It was the meeting of minds of some of these progenitors of the specialty that led to the development of the European Association for Clinical Pharmacology and Therapeutics (EACPT) 25 years ago arising from a working party supported by the World Health Organization in Europe. The EACPT now includes all major national organizations for clinical pharmacology in Europe, representing over 4000 individual professionals interested in clinical pharmacology and therapeutics. The EACPT has a major interest in promoting the safe use of medicines across Europe and internationally and has supported these aims since 1995, through biennial international scientific congresses and summer schools with delegates and presenters from around the world as well as various working group activities. In this article, the current executive committee members of EACPT recall this history, describe the evolution of the association over the last quarter of a century, and provide an update on the activities and ambitions of the association today.

Keywords Clinical pharmacology · History · Committee membership

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Background

Clinical pharmacology as a scientific discipline and medical specialty was unarguably born in the twentieth century [1]. Whilst pharmacology—the science behind the treatment of disease—had been in evolution since at least medieval times [2], the clinical discipline of pharmacology has had a more recent genesis and rather insidious evolution. During the 1900s, there were some clear father (parent) figures of clinical pharmacology in Europe that emerged and were responsible for the development of the specialty in this continent. This was a time when there were parallel developments in geographically dispersed academic departments (around the globe), during an age of excitement in drug discovery and clinical application of new therapeutic agents. It was the meeting of minds of some of these progenitors of the specialty that led to the development of the European Association for Clinical Pharmacology and Therapeutics (EACPT) 25 years ago arising from a working party supported by the World Health Organization in Europe. The EACPT now includes all major national organizations for clinical pharmacology in Europe, representing over 4000 individual professionals interested in clinical pharmacology and therapeutics. The EACPT has a major interest in promoting the safe use of medicines across Europe and internationally and has supported these aims since 1995, through biennial international scientific congresses and summer schools with delegates and presenters from around the world as well as various working group activities. In this article, the current executive committee members of EACPT recall this history, describe the evolution of the association over the last quarter of a century, and provide an update on the activities and ambitions of the association today.

History of clinical pharmacology as a discipline

There have been many articles that have eloquently described the origin of the term clinical pharmacology, and these will not be reproduced here in detail. Clinical pharmacology really evolved in the mid Twentieth century during a time of pharmacological revolution, a time when there was a realization that neither the dose nor the mechanism of action of many new small molecule drugs can always predict the clinical response. (One size does not always fit all!) Thus, many clinical pharmacology groups stemmed from analytical chemistry laboratories studying drug disposition of these new drugs. However, the discipline was more than just pharmacokinetic studies as clinical pharmacologists also became important figures in the design and evaluation of experimental and clinical trials, drug safety studies, and epidemiological research on drugs, as well as a hands-on clinical discipline offering advice on drug-related issues.

Clinical pharmacology as a bridging discipline between basic and applied research was carving out its own niche in science and practice throughout Europe. It was not surprising that with generation of new evidence in this area that there came the inception of specific journals dedicated to the methods and concepts of clinical pharmacology. In 1968, the new journal *Pharmacologica Clinica* was founded in a collaboration between the publisher Springer Verlag and Professor Dr. Hans Dengler from the University of Heidelberg, Germany [3]. Dengler (1925–1997) championed the cause of clinical pharmacology throughout his life and was instrumental in the discipline's uptake in Germany. Two years later the journal was renamed the European Journal of Clinical Pharmacology and is the current EACPT supported journal in 2019. From the early 1970s onwards, the journal has been championed by a number of figure-head colleagues within the growing field of clinical pharmacology as managing editors and contributors; the majority of which have also been active in EACPT activities.

The British Journal of Clinical Pharmacology (BJCP) was first published in 1974, four years after the clinical section of the longstanding British Pharmacological Society (established in 1934) had first met. This further new journal on the topic initially appeared bi-monthly containing articles relating to all aspects of drug action in man [4]. The first editor in chief of BJCP was Professor Graham Wilson from Glasgow, a man whose influence did much to get clinical pharmacology accepted as a specialty in its own right in Britain.

The origins of clinical pharmacology in some European countries may have pre-dated the formal birth of EACPT, but many countries were kindled by EACPT into development of the specialty on a national basis. (The EACPT committee are working on describing this interesting parallel development of the specialty of clinical pharmacology across Europe for a future publication). Nevertheless, there was overall rapid growth across Europe in the twentieth century (and in particular, in the 1960s and 1970s) of clinical pharmacology. The seminal step in the development of the discipline was the convening of a study group on clinical pharmacology in the European Offices of the World Health Organization in 1969. This group set out to demarcate the scope of the new discipline of clinical pharmacology, to promote the need for trained specialists in the subject, and encourage the coordination and appropriate scientific conduct of drug studies: the group reported their findings in 1970 [5].

Gestation and birth of EACPT

It was in the early 1990s that a group of clinical pharmacologists met in Verona (Italy) to consider creating a Europe-wide body to encourage clinical pharmacology

and therapeutic interests throughout Europe. This followed conversations that had started in the World Health Organization Working Group in the decade before. After wider consultation, a committee was created in 1993 under the chairmanship of Prof Folke Sjöqvist (Sweden) with the remit to prepare the first congress of EACPT, which was held in Paris in 1995. The interim committee also consisted of Georges Cheymol (France, Vice-Chairman), Norbert Rietbrock (Germany, Treasurer), Michael Orme (UK, Secretary) and committee members Pierre Bechtel (France), Jochen Kuhlmann (Germany), Allan Struthers (UK), Per Knut Lunde (Norway), Joan-Ramon Laporte (Spain), Leo Offerhaus (The Netherlands and WHO Europe) and Giampaolo Velo (Italy) [6].

However, the association became a formally registered association in August 1994 in German Law, which makes us 25 years' old in this calendar year of 2019.

It was in the Paris congress in 1995 that a formal constitution was agreed by the council formed by representative delegates of all at that time 26 countries involved. The statutes, which had been drafted by the interim committee, were confirmed and set out how the association should realize its aims to develop the specialty across Europe. It is a testament to the foresight of our societal forefathers that the original aims and objectives remain extant, and most importantly still very relevant in today's activities of the association (Table 1).

Table 1 Aims of the European Association for Clinical Pharmacology and Therapeutics

a) Promoting the use of clinical pharmacological services in healthcare delivery
b) Improving and harmonizing the teaching of the rational use of drugs at both undergraduate and postgraduate levels
c) Contributing with clinical pharmacological expertise to state policy decisions regarding the regulation of drugs in Europe
d) Arranging scientific meetings, workshops, and courses in clinical pharmacology and therapeutics in Europe
e) Utilizing the skills of clinical pharmacology and therapeutics in counteracting misuse of prescriptions drugs and other chemical substances
f) Promoting problem and patient-orientated drug information about medicines for physicians and other health professionals
g) Increasing the input of clinical pharmacological skills in the evaluation of drugs
h) Promoting high professional standards in the prescribing of drugs
i) Promoting high ethical standards in clinical drug research
j) Promoting the exchange of opinions in individual countries with regard to existing differences in clinical pharmacology and therapeutics
k) Encouraging collaboration with other agencies interested in clinical pharmacology and therapeutics e.g. WHO, European Regulatory Network, IUPHAR

EACPT activities over the last 25 years

From the beginning of EACPT in the early 1990s, EACPT meetings were organized to improve the interaction between clinical pharmacologists all over Europe, setting the stage for a clinical pharmacology network in research, teaching, and (public) health care. During the large meetings that were organized every other year, all fields of clinical pharmacology were covered. More recently the association has initiated partnerships with other societies outside Europe (such as South America and Korea) in order to enhance partnership, visibility, and networking. Starting from 2015 onwards, the organization of these biannual meetings has been harmonized by installing a central EACPT congress bureau.

Although the large biannual meetings allowed many clinical pharmacologists to meet and discuss new developments in their discipline, there was a growing feeling that there should also be meetings organized on a specific topic. These meetings with a smaller audience would facilitate interaction and exchange of knowledge and would reduce barriers for young clinical pharmacologists and trainees to approach and directly learn from the more experienced (older) colleagues. Furthermore, these meetings would allow the organization of specific "how-to" sessions. In the beginning, these meetings were organized as "summer schools", and most of these summer schools were devoted to teaching aspiring clinical pharmacologists in broad aspects of the specialty. For example, the 7th EACPT Summer School, organized in Alexandroupolis, Greece, in September 2009 by Professors Ingolf Cascorbi and Vangelis Manolopoulos introduced young (and not-so-young) pharmacologists, other clinicians and researchers to the principles and core subjects of clinical pharmacology covering topics such as the general principles of clinical pharmacology, rational drug use, pharmacoepidemiology, pharmacogenomics/personalized medicine, clinical trials, and emerging topics.

From 2014 onwards, these meetings were renamed to "Focus meetings". This renaming did not only allow the organization of meetings all year around (and not specifically in summer), but also emphasized the opportunity to really focus in depth on a certain topic, therefore not only attracting juniors but also providing a program that is of interest to senior clinical pharmacologists with a specific interest in that topic. Together with the renaming of this kind of meeting, the way they were managed also changed: a protocol was established for submitting and reviewing a proposal for an EACPT focus meeting and for proposing speakers from varied European countries. The first EACPT focus meeting was organized in 2014 by Prof Gerard Rongen and internists at Radboudumc in Nijmegen entitled "drugs to fight cardiovascular damage'. The 3-day meeting was very well attended (85 participants), not only by European clinical pharmacologists but also by colleagues from Asia, USA, and Australia (a trend that also

occurs for the large EACPT congresses). Speakers included clinical pharmacologists as well as cardiovascular experts from other disciplines such as radiology, cardiology, endocrinology, and molecular biology and covered topics from molecule to man, including state of the art lectures on the pathogenesis of atherosclerosis, hyperaldosteronism, functional vascular imaging, ischemia-reperfusion injury and pathophysiological and pharmacological implications of the (gut) microbioma. In addition to lectures and poster sessions, "how to" sessions were organized to learn specific ultrasound techniques to image blood vessels and to measure vascular function. Based on this template, in 2016, a successful focus meeting entitled "How to Assess Medicines from Research to Clinical Practice "Efficacy, Effectiveness, and Economic – 3E Assessment" was organized in Opatia (Croatia) by Professor Dinko Vitezic with a total of 138 attendees and lecturers from 27 countries. This was followed by a smaller focus meeting in 2018 organized by Professor Coleman and his team in Birmingham (UK) on "Innovations in Clinical Pharmacology and Therapeutics Education" attended by 52 attendees from 14 countries.

EACPT started as an umbrella organization of European societies for clinical pharmacology. Each member society puts forward delegates to the EACPT council depending on the size of their national society. The councilors have voting rights and are responsible for electing the executive committee, overseeing the finances, and procedural issues of the association. To increase the involvement of individual clinical pharmacologists in EACPT activities, from 2015 onwards, EACPT memberships were offered to individual clinical pharmacologists, and managed by a professional societal management office. Individual members can contribute to voting for the various awards, and collaborate via the website in online discussion forums.

Working groups

In order to ensure ongoing collaborations between formal meetings, the association has a number of working groups. Funding is available for each of the working groups in order to help them deliver any planned activities.

Education

Soon after the foundation of the EACPT, a small group of education-minded clinical pharmacologists was invited by Prof. Michael Orme (UK) to form the EACPT Education Subcommittee. They realized that the way that they were taught the principles and practice of rational prescribing was not the best for future prescribers. The pharmacology curriculum in many institutions did not prepare future medical practitioners well for the science and art of prescribing. The learning goals were derived from pre-clinical lectures on basic pharmacology encompassing detailed knowledge on the working mechanisms of too many drug classes and based on tedious reference texts. This was often followed in the "clinical phase" by an experienced clinician teaching about the disease and how to diagnose it whilst spending only a few minutes on pharmacotherapy saying "you can find that in the guideline later on". Traditionally every junior doctor would start clinical practice with responsibility for a lot of prescribing but actually not really prepared for the job. This situation was pictured strikingly in an editorial by Ramsey [7] (see Fig. 1).

In 1995, the CPT education frontrunners showed a positive effect of a problem-based learning course in pharmacotherapy for undergraduate medical students in an international randomized controlled trial [8]. The course was based on the WHO Guide to good prescribing [9] later followed by the teachers' guide to good prescribing in 2003 [10]. It was key leaders from EACPT such as Theo de Vries and Hans Hogerzeil (WHO) who led these important collaborative efforts to provide standardized resources available to all educators worldwide.

In 2007, in London, the EACPT and the British Pharmacological Society (BPS) jointly organized a meeting to discuss how to prepare junior doctors for safe prescribing [11]. Led by David Webb and Simon Maxwell, the meeting was attended by representatives from 12 European countries and addressed the following topics: (i) the state of undergraduate education in clinical pharmacology in Europe, (ii) the knowledge and competencies in relation to medicines that should be expected of a new graduate, (iii) assessments that might demonstrate that this minimum standard had been reached, (iv) a curriculum that might help medical students to achieve this standard, and (v) how competence can be developed in the postgraduate phase. Although several ideas and lines of action were decided during that meeting, almost all of

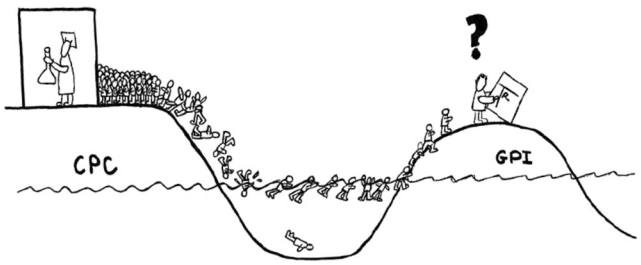

Fig. 1 An impression of the situation of teaching pharmacotherapy. On the left the clinical pharmacology professor on his Clinical Pharmacology Continent (CPC) is beavering away at his research, quite oblivious to what is happening on the General Practice Island (GPI) where most of the drugs are prescribed. Because of his research, the clinical pharmacology professor is also not aware of the increasing number of students trying in vain to get his attention in order to be taught therapeutics. The students are seen struggling across the gap towards the real world of medical practice, ill-prepared for the task facing them, and some do not make it

these challenges remain open today, including the introduction of a "European Prescribing License". Over the last 10 years, many further education initiatives have been undertaken using different novel educational principles such as learning by doing (in a student-led polypharmacy clinic), serious gaming, peer teaching, and simulation training. Objective Structured Clinical Examinations (OSCE) have been developed to test prescribing skills and online assessments (like the UK's Prescribing Safety Assessment (PSA)), and web-based e-learning platforms (like Pscribe) have been developed often on a national scale [12] (https://www.pscribe.nl/en-GB/Entrance/Home/Index). Plans are in place to spread many of these innovations in similar or associated forms in other European countries through the work of the education group.

Now, in 2019, the EACPT Education Working Group is an active group with 10 core members and many more associate members (https://www.eacpt.eu/working-groups/education/working-groups-and-projects/). The group has a role in organizing EACPT symposia and focus meetings, expert working parties, performing research in CPT education, building a network for European CPT teachers and developing new tools for CPT teaching. With the EACPT ambition to improve the level of undergraduate and postgraduate pharmacotherapy/prescribing training in Europe, the Education Working Group has recently taken the initiative to develop an international training and assessment program that will be freely available online for all European universities interested in a platform to increase the quality of their CPT curriculum [13].

The education working group is a real strength of the association, and one of the founding aims to improve and harmonize the teaching of the rational use of prescribing has come a long way in 25 years. There are many other benefits that have come from European Clinical Pharmacologists educating young students and doctors in the art of prescribing, not least that exposure to role model physicians during training serves as a way to attract young people into the specialty. There are however many challenges that CPT education will have to face in the next 25 years such as the broadening of prescribing activity to other professions, the impact that electronic prescribing and other health technology will have on our learners in practice, and the ever-increasing complexity of therapeutic options. Nevertheless, not only is there a lasting legacy in this area but also there is a thriving body of enthusiastic educators within EACPT to face these challenges in the future.

Young clinical pharmacologist working group

The core competencies for education in clinical pharmacology are well established throughout Europe but poorly harmonized within the National training programs. Harmonized training at undergraduate and postgraduate levels needs to be addressed in a collaborative approach. Opportunities for career development in clinical pharmacology also differ among European countries. Moreover, networking for young clinical pharmacologists is also a major goal in order to enhance collaborations and partnerships for education, research, and training through the European CP societies. To help in these matters, two successive EACPT chairs (Gonzalo Calvo (Spain) and Tabassome Simon (France)) decided to help young clinical pharmacologists to organize a pre-congress meeting before each EACPT biannual meeting. The goal was to stimulate discussions, exchange experiences, and provide networking opportunities between CP trainees and senior members of EACPT. The first meeting was organized in June 2015 in Madrid followed in June 2017 in Prague by Joaquin Saez (Spain) and Matthieu Roustit (France). Clinical pharmacology trainees were the main actors of these meetings which were both lively and friendly thus furthering attendees' professional development and career aspirations. For the Prague Meeting in 2017, the EACPT EC also decided for the first time to further encourage and make more visible the engagement and involvement of these younger pharmacologists, by asking young CPs to co-chair four oral sessions with a senior pharmacologist.

To facilitate the mobility and collaborations between young and senior pharmacologists, the young clinical pharmacologists working group together with the research group also organized a survey of research centers in clinical pharmacology in order to list relevant contact, area of research interests and availability for PhD and post-doc positions. The association plans to build on the small scale initial response by building up a contemporary list of active research centers and opportunities across Europe.

The future EACPT meeting in Stockholm will also be a great opportunity for young clinical pharmacologists to actively participate in a third pre-congress meeting as well as to the main congress meeting.

Regulatory affairs

The EACPT also advises health policy makers on criteria for approving drugs and for regulating medicines after licensing for clinical use. As one of the leading societies in the field of translational and clinical drug development, EACPT is frequently involved in the review of guidelines by regulators such as the European Medicines Agency (EMA). This involves interactions with EMA committees like CHMP (Committee for Medicinal Products for Human Use) in particular in the field of efficacy and safety guidelines and other multidisciplinary guidelines. For this task, during the 3–6 month period of release for consultation, coordinators are nominated by the society that collect input from experts in the respective field of clinical pharmacology.

In 2013, the European Medicines Agency launched working parties for leading European healthcare professional organizations to encourage interactions between European regulators of medicines and experts in health-related disciplines with regard to providing safe and effective medicines for EU member countries and the wider world.

The EACPT was an inaugural member of the EMA's Healthcare Professionals' Working Party (HCPWP), with EACPT past-president Professor Gonzalo Calvo as its founding and current co-chair. The EACPT through its delegates has contributed to the activities of the HCPWP through membership of and co-chairing of topic areas for social media, digital media for health, supporting patient engagement in use of medicines and minimizing medication errors. EACPT delegates have also since 2013 regularly organized sessions on these and related topics within the twice-yearly conferences for the over 60 EMA stakeholder health professional and patient organizations.

Research

For EACPT as a scientific society, promoting research is one of the key tasks. The main platform for sharing the most exciting research in clinical pharmacology is the biannual congress organized by the association. The meeting hosts hundreds of young and senior scientists for discussion of past research activities and accelerates the building of novel collaborations and science networks. A separate research working group has been more recently set up to promote collaborative work in the discipline. Plans for the working group going forward involve the selection of monthly publication highlights in the field of clinical pharmacology and discussion of these manuscripts at our webpage.

Lifetime achievement awards in clinical pharmacology

Since 2009, EACPT lifetime achievement awards in clinical pharmacology have been recognizing significant achievement, both for the benefit of science and also for the benefit and health of the specialty, over a whole working lifetime. The award recipients all went through remarkable careers whose discoveries and scientific results have fundamentally contributed to clinical pharmacology. Being some of the most cited pharmacologists in the world, many are listed by Thomson Reuters for years as ISI highly cited researchers in pharmacology. They also demonstrated a long-standing personal contribution in the clinical or educational field of clinical pharmacology that contributed towards the significant development of the discipline. They were chosen by the EACPT council following nominations from members of EACPT council and national member societies. Since 2015, the award winners are asked to give an award lecture to the congress and provide a paper for publication in the official EACPT journal.

The first award was presented by EACPT to Professor Folke Sjöqvist from Sweden in 2009 in Edinburgh. Professor Sjöqvist has been a leading clinical pharmacologist throughout Europe for decades in terms of research in the whole field of clinical pharmacology (TDM, pharmacogenetics, rational drug information, pharmacovigilance), education (112 fellows from 37 countries), and the development of the discipline with the publication of the manifesto in collaboration with WHO [14].

In 2011, Professor Sir Colin Dollery from the UK received the award in Budapest. His research focused on hypertension and drug safety. Appointed as professor of clinical pharmacology in 1968, Sir Colin had a wide and distinguished career. He was the founding chairman of the clinical pharmacology section of the British Pharmacological Society and trained numerous clinical pharmacologists in the UK. He chaired the organizing committee of the First World Conference on Clinical Pharmacology (held in London in 1980) and was the president of IUPHAR from 1987 to 1990.

During the Geneva Congress in 2013, Professor Sir Michael Rawlins, UK, and Professor Carlo Patrono, Italy, were jointly awarded. Besides his outstanding scientific contributions, Professor Sir Michael was the first chairman of the National Institute for Health and Clinical Excellence (NICE), one of the world's most important healthcare organizations, which published guidelines on the use of medicines and health technologies within the National Health Service based on clinical and cost-effectiveness. Professor Carlo Patrono's research has characterized the human pharmacology of aspirin as an inhibitor of platelet COX-1 and provided the basis for the development of low-dose aspirin as an antithrombotic agent. He also contributed to characterizing the human pharmacology of COX-2 inhibitors and evaluating their cardiovascular effects in different clinical settings.

In 2015, Prof Michel Eichelbaum, Germany, was awarded in Madrid. His primary research interest has been the pharmacogenetics of drug metabolizing enzymes and transporter proteins. In 1975, he discovered a genetic polymorphism in the oxidation of the antiarrhythmic sparteine, which later became known as CYP2D6 polymorphism. Later, he became involved in research on factors involved in the regulation of drug-metabolizing enzymes and transporters with special emphasis on nuclear receptors.

Professor Pertti J. Neuvonen, Finland, was awarded in Prague in 2017. His research focused on drug safety and individual variability in drug response, particularly on drug interactions and their mechanisms. Since 1970, his research group has found more than 200 previously unrecognized, clinically important drug-drug interactions and several significant food-drug interactions.

Professor Urs Albert Meyer will receive the 2019 lifetime achievement award in Stockholm. His research has focused on interindividual variations in drug response, from studying the drug sensitivity of the pharmacogenetic disease porphyria to the pharmacogenomics of drug disposition and its coregulation by drug interactions and environmental factors. He identified the genes and mutations in these genes causing variation in drug response and developed the first pharmacogenetic DNA tests, initially for the CYP2D6 and NAT2 genes. Urs Meyer has been highly committed to the teaching of clinical pharmacology to medical students and to training programs in drug development sciences (71 graduate students, 62 postdoctoral fellows and > 35 of his previous collaborators now in academic positions worldwide).

Best scientific papers

Since 2009, the EACPT best scientific paper prize is awarding the best scientific paper on a topic relevant to clinical pharmacology published by a European clinical pharmacologist in the 2 years before each EACPT congress based on criteria relating to the scientific quality of the work, broader impact on science, and importance of the work in the context of healthcare delivery). The previous award recipients are shown in Table 2.
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EACPT in 2019

EACPT is the leading society in Europe serving the European clinical pharmacology and therapeutic community. As a society of societies, we have 35 national societies affiliated to EACPT encompassing over 4000 members across the continent. However, EACPT also has global reach with many members of the global clinical pharmacology community attending our biennial congresses, focus meetings, and contributing to the wider work of the association. For example, our last congress attracted nearly 600 delegated from 55 countries around the world. We actively collaborate with a wide range of other European organizations and societies including the European Medicines Agency (EMA), the European Union of Medical Specialists (UEMS), The Federation of European Pharmacological Societies (EPHAR), European Drug Utilisation Research Group (EuroDURG); as well as International Societies, in particular the International Union of Basic and Clinical Pharmacology (IUPHAR). The association has always aimed to be inclusive from its genesis onwards and we are proud to serve a global community of clinical pharmacologists.

Challenges and opportunities for clinical pharmacology in the next 25 years

Clinical pharmacology is not without challenges, as readers of this journal will be aware, not least the visibility of the discipline amongst our scientific, physician and other healthcare colleagues. The challenges to the discipline of clinical pharmacology have been well represented in the literature over almost as many years as the specialty has existed [15]. Recent considerations suggest that the specialty is challenged in carving out its unique identity amongst a widening breadth of prescribers in healthcare and translational scientists in academia that threatens the future of the specialty [16]. It is the very breadth of therapeutics that is both a strength and weakness of the specialty of clinical pharmacology, as the broad scope of practice can be difficult to place in the modern medical specialist model, and yet the specialty offers almost limitless opportunities to young practitioners.

Another challenge, which might either be a threat or an opportunity, is the increasing use of omics techniques and biomarkers to evaluate drug effects, whether therapeutic or adverse. Clinical pharmacology must be to the forefront of these innovations that may well transform the way that clinical

Table 2 EACPT best scientific paper prize award winners

Best scientific paper author	Year received	City, Country	Title	Journal reference
Ian Wilkinson	2009	Cambridge, UK	Central pressure: variability and impact of cardiovascular risk factors: the Anglo-Cardiff Collaborative Trial II	Hypertension 2008; 51: 1476-82
Tabassome Simon	2011	Paris, France	Genetic determinants of response to clopidogrel and cardiovascular events	New England Journal of Medicine 2009; 360(4): 363–75.
David Devos	2013	Lille, France	Methylphenidate for gait hypokinesia and freezing in patients with Parkinson's disease undergoing subthalamic stimulation	Lancet Neurology 2012; 11(7): 589–596
Nicholas Bateman	2015	Edinburgh, UK	Reduction of adverse effects from intravenous acetylcysteine treatment for paracetamol poisoning	Lancet 2014; 383(9918): 697–704.
David Webb	2017	Edinburgh, UK	Spironolactone versus placebo, bisoprolol, and doxazosin to determine the optimal treatment for drug-resistant hypertension (PATHWAY-2)	Lancet 105; 386(10008): 2059–68.

trials are designed and that patients are diagnosed, dosed and/or monitored.

More generally, academic pharmacology is and should increasingly be translational so as: [1] to decipher drug effects (in particular adverse effects that often poorly understood), the main sources of drug response variability and the determinants of drug benefit-risk balance; [2] to design and conduct smarter clinical trials; [3] to detect low signals of serious adverse effects; and most importantly, [4] to orchestrate precision medicine.

Within healthcare and wider society, there is a push towards more cost-efficient healthcare which requires better formularies, guidelines for medication use, and ways to monitor safe and effective medication use; all activities which are well served by clinical pharmacologists working across health sectors [17]. A recent impact assessment in the UK has estimated that each £1 spent on hiring additional clinical pharmacologists has the potential to reduce health service costs by almost £6 [18].

It is for all of these reasons that EACPT remains a vibrant community of scientists and multidisciplinary practitioners that are well placed to serve healthcare, regulation, industry, and many other sectors well for the next 25 years and to promote innovations in the discovery, assessment and best use of drugs in the European population.

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References

1. Dollery CT (2006) Clinical pharmacology – the first 75 years and a view of the future. Br J Clin Pharmacol 61:650–665
2. Brater DC, Daly WJ (2000) Clinical pharmacology in the middle ages: principles that presage the 21st century. Clin Pharmacol Ther 67:447–450. https://doi.org/10.1067/mcp.2000.106465
3. Dahlqvist R (2008) The European Journal of Clinical Pharmacology: 40 years young and going strong. Eur J Clin Pharmacol 64(2):95–96. https://doi.org/10.1007/s00228-007-0433-y
4. Wilson GM (1974) The new journal. Br J Clin Pharmacol 1:7–8
5. WHO Technical Report Series, no. 446. Clinical pharmacology, scope, organisation training: report of a WHO study Group; 1970. Available at https://apps.who.int/iris/handle/10665/40774 accessed 12/03/2019
6. Orme M (1993) European Association of Clinical Pharmacology and Therapeutics. Br J Clin Pharm 36:183–184
7. Ramsay LE (1993) Bridging the gap between clinical pharmacology and rational drug prescribing. Br J Clin Pharmacol 35:575–576
8. de Vries TP, Henning RH, Hogerzeil HV, Bapna JS, Bero L, Kafle KK, Mabadeje AF, Santoso B, Smith AJ (1995) Impact of a short course in pharmacotherapy for undergraduate medical students: an international randomised controlled study. Lancet. 346(8988):1454–1457
9. World Health Organisation. Guide to good prescribing. http://apps.who.int/medicinedocs/en/d/Jwhozip23e/
10. World Health Organisation. The teachers guide to good prescribing. http://apps.who.int/medicinedocs/en/m/abstract/Js15940e/
11. Maxwell SRJ, Cascorbi I, Orme M, Webb DJ (2007) Educating European (junior) doctors for safe prescribing. Basic Clin Pharmacol Toxicol 101:395–400
12. Maxwell SRJ, Coleman JJ, Bollington L, Taylor C, Webb DJ (2017 Oct) Prescribing safety assessment 2016: delivery of a national prescribing assessment to 7343 UK final-year medical students. Br J Clin Pharmacol 83(10):2249–2258. https://doi.org/10.1111/bcp.13319
13. Brinkman DJ, Tichelaar J, Mokkink LB, Christiaens T, Likic R, Maciulaitis R, Costa J, Sanz EJ, Maxwell SJR, Richir MC, van Agtmael MA (2018) Education Working Group of the European Association for Clinical Pharmacology and Therapeutics (EACPT) and its affiliated network of teachers in pharmacotherapy (NOTIP). Key learning outcomes for clinical pharmacology and therapeutics education in Europe: a modified Delphi study. Clin Pharmacol Ther 104(2):317–325. https://doi.org/10.1002/cpt.962
14. Orme M (2013) Efforts and success world-wide in the field of clinical pharmacology. A personal review on the occasion of Folke Sjöqvist's 80th birthday. Eur J Clin Pharmacol 69(Suppl 1):3–9
15. Clinical Pharmacology the European challenge. WHO Regional Publications, European Series 1991, No. 39. Available at https://apps.who.int/iris/handle/10665/260454 accessed 12/03/2019
16. Maxwell SR, Webb DJ (2006) Clinical pharmacology–too young to die? Lancet. 367(9513):799–800
17. Benowitz NL (1997 Dec) Birthing of clinical pharmacologists. Clin Pharmacol Ther 62(6):587–591
18. British Pharmacological Society. Clinical Pharmacology and Therapeutics: the case for savings in the NHS. December 2016. Available at: https://www.bps.ac.uk/media-library-assets/library/clinical-pharmacology-and-therapeutics-the-case-f.accessed 12/03/2019