

British Pharmacological Society – Written evidence (INQ0031)

About us

The British Pharmacological Society (BPS) is the primary UK learned society concerned with research into drugs and the way they work. The Society has around 4,000 members working in academia, industry, regulatory agencies and the health services, and many are medically qualified. The Society covers the whole spectrum of pharmacology, including laboratory, clinical, and toxicological aspects. Pharmacology is a key knowledge and skills base for developments in the pharmaceutical and biotech industries, and is therefore fundamental to a thriving UK industry and R&D. These skills allow members of the Society to identify therapeutic areas of clinical need, develop novel treatments that target these areas and ensure these new treatments are incorporated into healthcare practice bringing benefit to patients. The Society publishes three scientific journals: the British Journal of Pharmacology, the British Journal of Clinical Pharmacology, and Pharmacology Research and Perspectives.

1. Executive Summary

- 1.1 We support the Government's ambition to increase health-span and welcome the opportunity to submit evidence on how this might be best achieved in practice. We have focused our submission on embedding research in the NHS, addressing multi-morbidity and polypharmacy, and implementing pharmacogenomics, which together should lead to improved patient safety in the NHS. These are all areas in which clinical pharmacology can help make an impact on the health of an ageing population.
- 1.2 Clinical pharmacology is a discipline focussed on the development and use of medicines through education, research, policy and practice. It is well-placed to support the development of education and training in high priority areas of training and clinical practice. Clinical pharmacologists are experts in prescribing medicines and are integral to providing prescribing knowledge for all healthcare professionals. However, the British Pharmacological Society has identified clinical pharmacology within the NHS as an area of critical skills shortages. In 2014 there were only 77 Clinical Pharmacology and Therapeutics (CPT) consultants in the UK[1]. This compares to a Royal Colleges of Physicians (London) recommendation of a workforce of 440[2]. While more recent census data suggest that the numbers are starting to rise, the Society is working to gain a fuller picture of the workforce. Concerns about the future of the clinical pharmacology workforce threaten the NHS' ability to safely prescribe to an ageing population who suffer with multimorbidity resulting in the use of multiple medicines (polypharmacy). We recommend investing strategically in the clinical pharmacology workforce with the aim of reaching 150 consultants by 2025. This could cost as little as £10.8 million per year, saving the NHS nearly £6 for every £1 invested[3]. Addressing the skills shortage is at the heart of the Clinical Pharmacology Skills Alliance (CPSA), a partnership formed by the Association of the British Pharmaceutical Industry (ABPI), the British Pharmacological Society (BPS), the Faculty of Pharmaceutical Medicine (FPM) and Health Education England (HEE).
- 1.3 Embedding research. The current inquiry rightly recognises the importance of research in addressing healthy ageing. To realise this potential, embedding a culture of research across the NHS must be a priority; this needs a specific focus on research into the issues facing the increasing elderly population. There must be a clear focus on building research capacity in the NHS, to ensure a 'research ready' and 'research active' workforce.
- 1.4 Addressing multi-morbidity and polypharmacy. The safe and appropriate use of medicines is central to the work of the NHS in benefitting patients. However, the current workforce does

not have the full skills base it needs to respond to the increasing challenges in the use of medicines, including caring for an ageing population that are typically receiving multiple medicines through polypharmacy. It is vital that support is provided to develop the most effective multidisciplinary teams for the future that should include clinical pharmacology and therapeutic specialists, pharmacy, care of the elderly specialists and general practitioners. We welcome the planned investment in clinical pharmacy and are currently working with the profession to develop new ways of working between pharmacy and clinical pharmacology. The development of this type of multidisciplinary working will also start breaking down barriers between specialties, which has been one of the determinants leading to unnecessary polypharmacy.

- 1.5 Implementing pharmacogenomics. Pharmacogenomics is the study of the role of the human genome in drug response. Applying pharmacogenomic techniques, it is possible to analyse how the genetic makeup of an individual patient affects their response to drugs both in terms of their effectiveness and the possibility of a patient having adverse events and drug interactions. The new opportunity that pharmacogenomics brings allows for the use of a patient's genetic information to individualise their drug therapy and to select the most ideal medicine and optimise the doses. As patients age, they are prescribed more medications and due to physiological changes and other morbidities are more susceptible to adverse events. Pharmacogenomics allows drugs to be selected that will work best or help clinicians to avoid adverse drug reactions in specific patients (e.g. with antiplatelet therapy or statins). At the same time pharmacogenomics can be used to optimise dosage preventing over/underdosing (e.g. warfarin).
- 1.6 In summary, to deal with the challenge of an ageing population, the NHS workforce must be skilled in the use of medicines. An ageing population is a key reason why challenges in the use of medicines are increasing. Clinical pharmacologists, in partnership with pharmacy, are well-placed to lead on prescribing and responsibilities of all the staff to use medicines to best effect and safely. Further, most clinical pharmacologists hold an academic post^[4]; they are an important group of academic clinicians who can help lead research in their own right and support the whole workforce to be 'research ready' and 'research active' for the benefit of patients. Clinical pharmacologists can also lead in the education and training of other healthcare professionals to improve prescribing and make them more aware of drug interactions, adverse reactions and individual care needs. Clinical pharmacologists have led on a national prescribing safety assessment (PSA), which now has to be passed by all newly qualified doctors at entry to foundation training^[5].
- 1.7 Our response outlines a number of interventions that we believe will help achieve these aims. The complex and growing challenge of an ageing population requires a coordinated approach across government, NHS England, NHS Improvement and individual NHS Trusts. There is a need to target investment towards supporting delivery of care against known challenges in elderly populations (such as polypharmacy) and a concerted effort to improve patient engagement with research. In summary, the sector should work together to:
 - Set clear targets aiming to improve the research activity of NHS Trusts
 - Provide investment for NHS workforce planning and training that recognises the growing need to address the specific care needs of older and elderly patients. Such workforce implications include the need to:
 - Invest in prescribing training and models of care that can help tackle the growing burden of problematic polypharmacy
 - Invest in guidance, training and systems to support all healthcare professionals implement pharmacogenomics across the NHS
 - Establish and support multidisciplinary teams to deliver care for elderly patients

- 1.8 We would be happy to support the inquiry going forward. For further input, please contact: Natalie Harrison, Education, Engagement and Policy Officer, e. natalie.harrison@bps.ac.uk, t. +44 (0)20 7843 0493.

2. Embedding research in the NHS

- 2.1 As this inquiry recognises, enabling research is crucial in identifying 'treatments for delaying or managing the negative effects of ageing'. We would also like to note the importance of the broader spectrum of clinical research, that is, any research that improves patient outcomes. For example, this may include, service evaluation, observational studies, quantitative analysis of big data or qualitative studies.
- 2.2 Embedding a culture of research across the NHS is a priority for the Long-Term Plan. The Royal College of Physicians' 2016 report 'Research for All'[6] notes that patients in research-active institutions have better outcomes than those in other institutions and are more likely to benefit from earlier access to new treatments, technologies and approaches. Building on this report, this year the College published its support for the 'Delivering research for all' project, which calls for every clinician working in the NHS to become research active[7]. Encouraging the wider workforce to develop expertise in these areas would broaden career paths, be attractive to global talent, enhance retention, and increase productivity, whilst bringing direct benefits to patients.
- 2.3 Research into how best to improve the engagement of older patients with technologies will be important in terms of supporting patients to engage with their own care. For example, a clinical pharmacologist commented that "in my hypertension work, I deliberately ask whether they have a smartphone, and if they do I ask them to download a blood pressure app on which they record their blood pressure and bring the readings back to me. This makes them more aware of their condition, and thereby participate in their care." Not all innovations need to be expensive – some common-sense applications can also have important benefits. It is also important to consider whether older and elderly patients feel able to engage with research or whether there are barriers stopping them, that need to be addressed. Similarly, research priorities must be informed by the lived experience and needs of patients. The James Lind Alliance[8] is a good example of such engagement.
- 2.4 We recommend that time for research, and time for research training, is included in job plans, and that healthcare professionals must have access to appropriate education and training to support their engagement with research. In addition, it is important that targets relating to research are set for NHS Trusts by government as this does not currently happen.

3. Addressing multi-morbidity and polypharmacy

- 3.1 As the population ages, people increasingly have multiple co-existing chronic diseases (multimorbidity), necessitating the use of multiple medicines (polypharmacy); over 1 million people in the UK take 8 or more medicines per day. Polypharmacy has enormous impacts on the health economy; total NHS expenditure on drugs was estimated to be £17.4 billion in 2016/17 and is growing at an average of around 5% per year[9]. It is also linked to negative clinical outcomes including increased risk of hospital admission due to Adverse Drug Reactions (ADRs)[10] and reduction in physical and cognitive functioning[11].
- 3.2 The Shape of Training Review[12] states the need for more doctors capable of providing general care in broad specialties for such patients and clinical pharmacologists are ideally suited to meet this need and support the development of these skills across the NHS, contributing to proactive multi-disciplinary teams. The King's Fund has already recognised

the extent of polypharmacy across the NHS and the importance of clinical pharmacologists in meeting this challenge[13].

- 3.3 The collaboration between clinical pharmacology and clinical pharmacy has historically focused on medicines management at local, regional and national levels. It is increasingly recognised that their complementary skills could also be merged to great effect in the clinical setting. To this end, several centres across the UK are establishing dedicated integrated polypharmacy services, run by clinical pharmacologists in partnership with clinical pharmacists. Each represents a collaborative approach to clinical decision making in these complex patients, aiming to provide holistic, non-organ-specific medical support in conjunction with medicines expertise, thereby reducing medication-related harm.
- 3.4 Given its relatively small workforce, clinical pharmacology's strength comes not in its numbers, but in its ability to work closely together and enhance opportunities for shared learning. All the UK centres developing polypharmacy services are joining forces to create a Polypharmacy Service Consortium. This will unite clinical pharmacologists, GPs and clinical pharmacists with an interest in improving polypharmacy through dedicated services. Referral pathways and clinical protocols will be designed and developed, aiming to create efficient, effective and sustainable polypharmacy services across the UK. Data on clinical outcomes (hospital admissions, ADRs, Health-Related Quality of Life etc) and economic impacts will be collected and collated to evaluate effectiveness and expandability.
- 3.5 We recommend investing in research to assess models of practice in addition to other forms of research. Specifically, we believe it will be important to evaluate the models of practice that can help address complex polypharmacy. We welcome the planned investment in clinical pharmacy (which already provides leadership in medicines optimisation[14]) and are currently working with the profession to develop and assess new ways of working with clinical pharmacology. Different regions will have different resources and needs, so research into the models of practice that are most impactful and scalable will be important. This is something that we are actively exploring and would be happy to share more information on this with the Committee.

4. Implementing pharmacogenomics

- 4.1 Aspects of pharmacogenomics are ready for implementation within the NHS and would be consistent with the aims of the NHS Long Term Plan and the drive of the NHS towards personalised medicine. Pharmacogenomics requires consideration of both genomic aspects that drive variability in drug responses, and a knowledge of clinical pharmacology and prescribing. The workforce must be ready to implement pharmacogenomics testing, including taking into account the complexities of prescribing (eg, age, renal function, hepatic function and drug-drug interactions). Clinical pharmacologists are already playing a leading role in developing the plans for implementation of pharmacogenomics in the NHS working with NHS England and Genomics England. This must continue because clinical pharmacologists are well-placed to help address the workforce implications of population-wide roll out of pharmacogenomics. However, as the total number of clinical pharmacologists is small, there needs to be an increase in the clinical pharmacology workforce. This is important, not only for the next 5-10 years, but also beyond, as the knowledge of how the genome affects drug response and how genomics can help deliver new drugs is set to increase. Therefore, funding to embed training in this area as an important part of Continuing Professional Development is essential.
- 4.2 Elderly patients are subject to multiple health problems resulting in prescription of multiple medicines and ultimately polypharmacy. As the number of medications increases so does the possibility of drug interactions and adverse drug reactions resulting in hospital

admission and further morbidity[15][16]. In addition, physiological changes (e.g. hepatic and renal function) also affect the pharmacological response to medications. Pharmacogenomic testing will enable clinicians to better identify those patients who are most likely to respond to a particular treatment, optimise dose selection and avoid medications that will be ineffective or lead to adverse drug reactions in a specific patient. We would support priority implementation of pharmacogenomics particularly in the elderly population.

- 4.3 We would also like to highlight that 'the elderly' are not a homogenous group. It is critically important that patients from all ethnic backgrounds and sexes benefit from advances in pharmacogenomics and genomic medicine. However, currently most data are sourced from those of European descent. We support calls for research communities to address these inequalities through an explicit focus on gathering data from underrepresented groups[17]. Similarly, it is important to ensure that females or intersex groups are properly represented and that genomics (and other) research should aim to be fully inclusive and representative[18][19].

5. Our Recommendations

- 5.1 The complex and growing challenge of an ageing population requires a coordinated approach across government, NHS England, NHS Improvement and individual NHS Trusts. There is a need to target investment towards supporting delivery of care against known challenges in elderly populations (such as polypharmacy) and a concerted effort to improve patient engagement with research. The sector should work together to:

- Set clear targets aiming to improve the research activity of NHS Trusts
- Provide investment for NHS workforce planning and training that recognises the growing need to address the specific care needs of older and elderly patients.

- 5.2 With regard to implications for the NHS workforce, we recommend that the upcoming NHS People plan should recognise the growing challenge of polypharmacy and the importance of training as well as models and systems of care that enable healthcare professionals to support older and elderly patients in the appropriate and optimal use of medicines. Specifically, we recommend that the NHS should:

- Invest in prescribing training and models of care that can help tackle the growing burden of problematic polypharmacy. Annual medication reviews aim to reduce over prescribing and polypharmacy and ensure optimal use of medicines. However, there is a need for further support to inform decisions about when to continue, and when to safely stop, medicines. Investing in partnerships between clinical pharmacology and clinical pharmacy can have an important part in ensuring that the decisions are made appropriately. The Society is working to develop such models of practice in partnership with pharmacy.
- Invest in guidance, training and systems to support all healthcare professionals implement pharmacogenomics across the NHS. It is unrealistic to expect all healthcare professionals to have an intimate knowledge of pharmacogenomics and effects on prescribing. For pharmacogenomics to be successful, healthcare professionals need to be given clear guidance with regards to selection of drug and alternatives as well as dosage optimisation. We also recommend the design and implementation of systems to enable electronic communication of pharmacogenomics data/results. Clinical pharmacologists are uniquely placed to play a central role in understanding the pharmacogenetics, prescribing and influence on patients.

- Establish and support multidisciplinary teams to deliver care for elderly patients. This should be focused in the area of polypharmacy and deprescribing, with the aim of reducing pill burden, reducing iatrogenic morbidity, improving outcomes, and reducing costs. This is all in keeping with the NHS Long Term Plan. Clinical pharmacologists are well placed to support training of these multidisciplinary teams (including healthcare and social care professionals) in the treatment of the elderly and prescribing awareness.

19 September 2019

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