Opportunities for collaboration between pharmacists and clinical pharmacologists to support medicines optimisation in the UK.

Professor Nina L Barnett PhD FFRPS FRPharmS IPresc

Consultant Pharmacist, Care of Older People

London Northwest Healthcare NHS trust and

NHS Specialist Pharmacy Service

Visiting professor, Kings College London

Nina.barnett@nhs.net

Abstract 149 words

Medicines optimisation is a clinician-driven, person-centred ongoing process. Pharmacists and clinical pharmacologists have medicines-related expertise to deliver medication review to optimise clinical and cost effective use of medication, aligned with patient preferences, to contribute to improved health outcomes. There is a large pharmacy workforce, directly accessible to patients, who can provide expert medicines-related care on the high street, and increasingly in General Practice and care homes settings. There are a small number of clinical pharmacologists in practice, mainly working in a hospital setting. Potential opportunities for collaboration are extensive, including local initiatives in collaborative in education, formulary/medicines management, electronic prescribing, service evaluation, research, direct clinical services as well as strategic planning through the Regional Medicines Optimisation Committees. Pharmacists and clinical pharmacologists have complementary skill sets and through acknowledging the differences in their approaches and valuing their unique skills, health services can ensure that patients are signposted to appropriate services.

Medicines optimisation

Medicines optimisation has been variously defined by National Institute of Health and Clinical Excellence (NICE, United Kingdom) , Royal Pharmaceutical Society (RPS, Great Britain) and NHS England (1,2,3) as involving medication review to optimise clinical and cost effective use of medication, in line with patient preferences, to contribute to improved health outcomes. It is a **clinician-driven**, **person-centred** ongoing process supporting patients in the **safe, effective medicines use**, to facilitate **getting the most from the medicines they choose to take**. The agenda is huge and requires input from different health care professions although. Medicines optimisation is the responsibility of all clinical professionals involved in improving the health of patients through medicines. Thus far, the agenda has been driven by pharmacists, clinical pharmacologists, and geriatricians as well as some general practitioners who have all led the way in both identifying patients at risk of preventable medicines-related problems and undertaking medication review to reduce this risk. This involves understanding the evidence for the effectiveness, risks and benefits of prescribing (starting) and deprescribing (stopping) medicines in relation to individual patients as well as at a population level. This aligns with the definition proposed by Sackett et al (4) in 1996, which describes evidence-based medicine as combining the best available research evidence and the

patient's views, goals, wishes and circumstances, using clinical judgement to agree on an appropriate way forward for medication use.

Workforce

The pharmacy workforce is ideally placed to support medicines optimisation in this way, using both the evidence base and person-centred skills. In 2008 approximately 70% of the workforce (table 1) was placed the community, where patients have direct access, without appointments, to increasingly expert health professionals in medicines-related care on the high street (see table 1).

Table 1: Proportion of GB pharmacist workforce by sector (2008)

Sector	Proportion of 2008 workforce[7]
Community	71%
Hospital	21%
Primary care	7%
Industry	4%
Academia	3%
Other	4%

Source: Pharmacy Workforce Census 2008 (RPSGB, 2009)

** Total is >100% because some respondents had more than one sector of work.*

The demographic is changing and pharmacists are now being deployed into new areas of practice, including General Practice and care homes. Following a successful pilot programme, 491 pharmacists began working in general practice. The General Practice Forward View (5) committed over £100million to support an extra 1,500 clinical pharmacists to work in general practice by 2020/21 (6). Many of these pharmacists are already in place, running medicines optimisation clinics in general practice and in specific therapeutic areas. Additionally, there is much work being undertaken to improve medicines-related support for people in care homes, with 240 new clinical pharmacy professionals being recruited to work in care homes (7), trained through a national programme.

Pharmacists in the community are directly available to patient without appointment on the high street. In addition, there are a smaller number of specialist pharmacists and Consultant Pharmacists working across primary and secondary care. A recent UK publication, known as the NHS Long term plan (8), has further developed opportunities for pharmacists to contribute to medicines optimisation. This includes increasing the number of clinical pharmacists in primary care networks supporting general practitioners and highlighting the continuing role of community pharmacists in supporting prevention.

However, pharmacists are not the only health care professionals actively involved in medicines optimisation. Other such health care providers include consultants such as internists (general physicians), geriatricians and clinical pharmacologists. Given the difference in skillset between pharmacists and their medical peers (clinical pharmacologists) it is important to both professions to

recognise where pharmacists skills can complement those of clinical pharmacologists, and to identify where the combined skills of others involved in medicine optimisation, such as geriatricians, can contribute to this agenda. It is important to recognise the large difference in workforce numbers between the two professions, with 52,000 registered pharmacists in Great Britain (in 2016) and 136 registered clinical pharmacologists (in 2017). In relation to the clinical pharmacology workforce, there are currently a small number of clinical pharmacologists in practice, with the Royal College of Physicians census dashboard (9) indicating 94 consultants and 42 trainees. The consultant workforce has expanded over the last 15 years from approximately 60 in 2004 to the current 94. In relation to the 42 trainees across the UK, there are also clinical pharmacology/therapeutics academic clinical fellows and clinical lecturers in the specialty, encouraged by this speciality as a theme for the National Institute of Health Research (NIHR) in its competition bids for academic posts. For example, in London, there are 3 lecturers and 7 academic clinical fellows, in addition to the NHS-funded clinical pharmacologist posts (10)

Despite the large difference in workforce numbers, both professions are active in virtually all settings where pharmaceutical care is provided such as hospitals, nursing homes, general practice settings and communities. Medicines optimisation at the level of the individual patient is undertaken by both professions and in hospital settings, medicines optimisation committees are often chaired by a clinical pharmacologist (where available) and co-chaired by a pharmacist. As multidisciplinary, cross-sector and interface team working increases, this may result in closer working relationships between clinical pharmacologists and pharmacists, particularly in general practice, which could positively contribute to medicines-related care for the most complex patients requiring medication review.

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Collaboration

Given that both pharmacists and clinical pharmacologists focus on maximising the benefit and minimising harm from medication, collaboration between professions would seem a natural pairing to promote medicines optimisation in a variety of settings. However, thus far, joint working is not yet commonly found in clinical settings. A systematic review of medication review identified pharmacist-led interventions (11) and a recent evaluation discusses the potential impact of medication review in general practice (12). However there is little current evidence for the involvement of clinical pharmacologists, despite the fact that clinical pharmacologists play an essential part in medicines optimisation. Given the size of the medicines optimisation challenge, it would be prudent to consider all suitably skilled clinical not only as contributors but also as collaborators in this work.

Potential opportunities for collaboration are extensive, including initiatives in collaborative in education, formulary/medicines management, electronic prescribing, service evaluation and research as well as clinical services. One example of this is the work at University College London (UCL), University College London Hospital (UCLH) and North Central London (NCL). Future opportunities can make use of technological advances to offer opportunities for remote consultations both between professionals (pharmacists and clinical pharmacologists who are not co-located).

Table 2 Examples of collaborative working between pharmacists and clinical pharmacologists

Education –Medical and pharmacy undergraduate students have been participating in integrated workshops at UCL. Pharmacists and Clinical Pharmacologist have collaborated to deliver innovative teaching methods, some of which become routine practice outside the university environment, for example, prescribing assessments and fitness to practice sessions. Clinical pharmacologists have also acted as Designated Medical Practitioners (DMPs) for many of the pharmacists undertaking independent prescribing courses. **Formulary and Medicines Management** – UCLH and NCL formulary/drug and therapeutics committees are joined within the NCL Sustainability and Transformation Plan (STP) footprint. They are run and managed collaboratively between clinical pharmacologists and pharmacists. The Chairs of both committees are clinical pharmacologists, and the supporting team are pharmacists. Juniors from both professions are involved in reviewing and presenting the evidence bases for applications. **Prescribing technology** - The project to procure, develop, implement and electronic prescribing and administration technology was led by Pharmacy and supported by clinical pharmacologists who provided input to weekly team meetings, and the monthly project board meetings. The project and rollout took four years and collaborative working has continued towards implementing a total electronic health record system to replace all electronic systems across the organisation. **Audit, service evaluation and research** – A Centre for Medicines Optimisation Research and Education (CMORE) has been established with work streams involving collaborations between pharmacists and clinical pharmacologists. The Board includes pharmacists and clinical pharmacologists, along with other academics and clinicians. **Clinical** – Clinical Pharmacologists and pharmacists are working together to explore the potential for a joint pharmacist/clinical pharmacologist 'polypharmacy' and de-prescribing clinic. While this is currently in the feasibility and proof-of-concept pilot phase, the demand for this is supported by enthusiasm from GPs it is expected that this will be a long-term venture towards shared responsibility for medicines optimisation.

Personal communication: R Offord, 16th August 2018

How can Regional Medicines Optimisation Committees *(RMOCS*) support collaboration?

There are four RMOCs set up by NHS England to maximise the opportunity for collaboration in relation to all areas of medicines optimisation. The RMOCs focus on areas of healthcare where there is unwarranted variation which could benefit from sharing of best practice, such as Polypharmacy, care homes, use of Biosimilar medicines and antimicrobial stewardship. The RMOCs aim to (13):

- Identify best practice and evidence
- Establish standards and metrics
- Highlight examples of good practice
- Support monitoring/governance

The four RMOCs across England have identified areas of specific focus, with London focussing on polypharmacy. The chair and vice chair of the subgroup are a pharmacist and clinical pharmacologist and it is intended that good practice in medicines optimisation around polypharmacy will be disseminated through both professions to optimise clinical skills mix for patient benefit in this area.

Challenges and enablers

With any agenda as large as polypharmacy, there are challenges as well as enablers to moving this work forward. Organisational and Sustainability and Transformation Partnership (STP) priorities can promote or preclude establishment of polypharmacy reviews. The challenge of both identifying who benefits most from complex reviews and having the appropriate amount of time to undertake polypharmacy consultations is common to all health professionals involved in medicines optimisation, as dedicated time is required for complex reviews. Individual clinicians, clinical pharmacologists, geriatricians and pharmacists alike, have access to excellent tools to support medicines optimisation, such as the NHS Scotland polypharmacy tool (14), anticholinergic burden (15) and the National Health Service Business Services Authority (NHS BSA) polypharmacy metrics (16), however there are challenges to embedding the use of these tools in practice. Patients have specific views regarding polypharmacy and medication review: some may wish to reduce their medicines, some may not, and some may consider reviews as cost saving measures and reject them. For medicines optimisation consultations around polypharmacy to be effective, it will require conversations with patients to elicit their agenda: what matters to them. This needs to be combined with an easily accessible, relevant evidence base to support practitioners in using the clinical judgement to optimise medicines in person-centred way.

Moving forward

By identifying areas of good practice, evidence and metrics, the RMOCs can support embedding of effective medicines optimisation in the area of polypharmacy, using the skills of the most appropriate health care professionals. Both pharmacists and clinical pharmacologists can respond to the need for generalist clinicians to do this (working across all disease areas with medicines) as well as provide expert practice (expertise in use of medicines). This may be new territory for some practitioners, but both professions are aware that their traditional roles are changing and this is an opportunity not to be missed for both professionals and for patient benefit.

By setting minimum standards for polypharmacy and minimum competencies for practitioners, the public will be assured that medicines optimisation consultations will be undertaken by the most suitable person for their needs. The RMOC can work with commissioners to develop contractual levers to encourage polypharmacy activity and encourage use of validated measurable outcomes, such as NHS Business Services Authority polypharmacy metrics. The RMOC has the opportunity to be flexible about **which** tool or method is chosen to undertake reviews without compromising the quality or validity of the metrics.

It is up to both professions to be flexible about **who** does the work, ensuring the competencies of whichever professional group undertakes the work. The following table illustrates how

polypharmacy work could be shared according to complexity of cases and competencies of practitioners:

Table 3 Complexity of medicines optimisation consultations with practitioner examples

What	When (post qualification)	Who
Level 1: Basic	Year 1	Foundation practitioners (doctors and independent prescribers)
Level 2: Intermediate	Year 2 to 5	Doctors and independent prescribers expanding their practice
Level 3: Advanced	Year 5 to 9	Specialist practitioners e.g. SpR, senior pharmacist IPs
Level 4: Very advanced	Years 10 onwards	Consultant pharmacists, Consultants Clinical Pharmacologists, advanced clinical pharmacists, some GPs, General Medicine Care of the Elderly consultants

Courtesy of Prof E Baker. Personal Communication [May 2018]

Summary

Pharmacists and clinical pharmacologists have complementary skill sets. By acknowledging the differences in their approaches and valuing their unique skills, health services can ensure that patients are signposted to appropriate services. Both professions have the opportunity to work together to share their professional experiences of patient care and medication review, learn from each other to deliver medicines optimisation consistently, widely and effectively for patient benefit.

Declaration of interest

No interests to declare.

References

1. National Institute for Health and Care Excellence. Medicines optimisation: the safe and effective us of medicines to enable the best possible outcomes. NG5 published March 2015. https://www.nice.org.uk/guidance/ng5/chapter/introduction [accessed 31 Oct 2018]

2. Picton C and Wright H. Medicines Optimisation: Helping patients make the most of medicines. Royal Pharmaceutical Society. Published May 2013 https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy/helping-patients-make-the-most-of-their-medicines.pdf [accessed 31 Oct 2018]

3. NHS England. Medicines Optimisation. https://www.england.nhs.uk/medicines/medicines-optimisation/ [accessed 31 Oct 2018]

4. Sackett, David L., William MC Rosenberg, JA Muir Gray, R. Brian Haynes, and W. Scott Richardson. "Evidence based medicine: what it is and what it isn't." British Medical Journal (1996): 71-72. https://www.bmj.com/content/312/7023/71 [accessed 31 Oct 2018]

5. NHS England. General practice forward view published 21 April 2016 updated 19 May 2017 https://www.england.nhs.uk/publication/general-practice-forward-view-gpfv/ [accessed 31 Oct 2018]
6. NHS England Clinical Pharmacists in General Practice https://www.england.nhs.uk/gp/gpfv/workforce/building-the-general-practice-workforce/cp-gp/ [accessed 31 Oct 2018]
7. Ridge K. Pharmacists prescribing better care (blog). NHS England 20 April 2018 https://www.england.nhs.uk/blog/pharmacists-prescribing-better-care/ [accessed 31 Oct 2018]
8. NHS Long Term Plan. NHS England published 7th January 2019 https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/ [accessed 3 Feburary 2019]
9. Royal College of Physicians. Focus on Physicians: 2017-18 census (UK consultants and higher speciality trainees). Royal College of Physicians 28th June 2017. https://www.rcplondon.ac.uk/projects/outputs/focus-physicians-2017-18-census-uk-consultants-and-higher-specialty-trainees (accessed 25 February 2019)
10. Personal communication, Professor Emma Baker, 26th February 2019
11. 11 Jokanovic N, Tan EC, Sudhakaran S, Kirkpatrick CM, Dooley MJ, Ryan-Atwood TE, Bell JS. Pharmacist-led medication review in community settings: an overview of systematic reviews. Research in Social and Administrative Pharmacy. 2017 Jul 1;13(4):661-85. https://www.ncbi.nlm.nih.gov/pubmed/27665364
12. Hazen AC, de Bont AA, Leendertse AJ, Zwart DL, de Wit NJ, de Gier JJ, Bouvy ML. How Clinical Integration of Pharmacists in General Practice has Impact on Medication Therapy Management: A Theory-oriented Evaluation. International journal of integrated care. 2019 Jan 2;19(1).
13. NHS England Regional Medicines Optimisation Committees. First edition April 2017 https://www.england.nhs.uk/wp-content/uploads/2017/04/regional-medicines-optimisation-committees-operating-model.pdf [accessed 31 Oct 2018]
14. NHS Scotland Polypharmacy Guidance Realistic Prescribing 3rrd Edition, 2018 https://www.therapeutics.scot.nhs.uk/wp-content/uploads/2018/09/Polypharmacy-Guidance-2018.pdf
15. South London and Maudsley NHS Foundation Trust 2019 The anticholinergic effect on cognition tool http://www.medichec.com/ [accessed 3 Feburary 2019]
16. National Health Service Medicines Optimisation: Polypharmacy https://www.nhsbsa.nhs.uk/epact2/dashboards-specifications/medicines-optimisation-polypharmacy [accessed 3 Feburary 2019]