The role of the clinical pharmacist in the respiratory or sleep multidisciplinary team

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Shareable abstract (@ERSpublications)
Pharmacists deliver high-level and impactful medicines-related care that improves patients' outcomes and healthcare experience. This is most evident in respiratory medicine when they are imbedded within the MDT and able to also support colleagues. https://bit.ly/3sd8sD9

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Abstract

The role of the pharmacist has evolved significantly, not least over the last 20 years. It delivers a skilled profession with a vital role in medicines optimisation and the management of patients with a respiratory or sleep disorder. While pharmacists are capable of acting as independent practitioners delivering direct patient care, this article explores their contribution to multidisciplinary teams within asthma, COPD, cystic fibrosis, tuberculosis, interstitial lung disease and sleep medicine. Having identified patient cohorts needing specialist medicines support, notably those with poor medicines adherence or specific medicines-related needs (for example during adolescence, or women who are pregnant or breastfeeding), these pharmacists work within primary, secondary and specialist tertiary care. The aim of this review is to share and inspire innovative models of working to include more pharmacists in respiratory and sleep medicine.

Introduction

Valderas *et al*. [1] described a comorbidity as that associated with "worse health outcomes, more complex clinical management, and increased healthcare costs". Medicines non-adherence clearly fits within this definition, and therefore needs specialist input within the multidisciplinary team (MDT) to facilitate its detection and management. Pharmacists pride themselves on being leaders in the field of medicines optimisation [2]. The goal of medicines optimisation is to improve patient outcomes through safe and effective medicines use, with minimal waste or administration of unnecessary treatments. This review will describe the profession's journey and how that has led to the varied roles delivered by specialist clinical pharmacists in the UK respiratory MDT. It is hoped this will inspire other healthcare systems to recognise the value pharmacists could bring to their services.

The profession of apothecary can be dated back at least to 2600 BC; then, in 1240 AD, an edict issued from King Frederick II separated the professions of physicians and pharmacists, and demanded regulation of both. Modern day entrance to the pharmacy profession in the UK requires successful completion of a 4-year Masters level undergraduate degree (MPharm), followed by a compulsory 1-year work-based programme prior to further exams and application for registration as a pharmacist. However, a recent reform means that students starting pharmacy school this year will undertake a more integrated 5-year course that mirrors similar courses offered in mainland Europe.

The seminal paper for clinical pharmacy was published in 1990, when Hepler and Strand [3] defined their vision for the future of the profession. It described a move away from traditional dispensing roles towards addressing preventable, drug-related morbidity and mortality. It eloquently made the case for the adoption of patient-centred pharmaceutical care as our philosophy, sharing responsibility for the outcomes

of drug therapy, and clarifying the need to establish cooperative relationships with other healthcare professions. They made clear the necessary paradigm shift or "re-professionalisation" where, through philosophical, organisational and functional changes, healthcare systems, pharmacy schools and individual pharmacists themselves would ensure the safe and effective drug therapy for individual patients.

In response to this call to action, strong pharmacy leadership has delivered substantial change in pharmacy roles and responsibilities in the UK National Health Service (NHS). In 2003, the concept of the pharmacist supplementary prescriber was described by the UK Department of Health. It allowed accredited pharmacists to prescribe medicines to a patient within an agreed clinical management plan for a specific condition under the guidance of a doctor (or dentist). In 2006, this was extended to offer pharmacist independent prescribing rights, which added the responsibility for the assessment, diagnosis and consequent management of that patient. To date, the independent prescribing course has only been completed by qualified pharmacists, but new standards mean all pharmacists will be permitted to prescribe at the point of registration. That is, from 2026, after successful completion of the pharmacy degree and their foundation year training, all UK pharmacists will be able to prescribe medicines.

Another important development for the profession was the establishment of the consultant pharmacist programme. Introduced by the NHS in 2005 [4], consultant pharmacists are recognised as leaders in the profession and clinical experts delivering care and driving change across the healthcare system. Their purpose is primarily to undertake activities that use their extensive expert knowledge and skills to contribute to improving the health of individuals and the wider population.

The extended role of pharmacists in respiratory care was recognised in the 2019 NHS Long Term Plan [4], with involvement in respiratory medication optimisation, across all sectors of pharmacy, further defined in 2021 by the Accelerated Access Collaborative [5]. It described the role the pharmacy profession should play in supporting responsible respiratory prescribing, locally and nationally, to promote and implement evidence-based prescribing guidance, address environmental sustainability concerns and resolution of health inequalities. National respiratory committees exist to support pharmacists working in respiratory medicine, or hoping to do so in the future. For example, the British Thoracic Society has a pharmacist specialist advisory group, and internationally, support is available through the International Pharmaceutical Federation [6, 7].

Currently, pharmacists contribute to a wide range of MDTs within respiratory medicine, and a selection of their roles will be described here. In broad terms, the pharmacist 1) supports medicines decision-making and often leads on ensuring appropriate medicines availability, *e.g.* through facilitating early access to medicines or supporting clinical trials; 2) accepts referrals to counsel patients on therapies (including answering patient questions on medicines risks and benefits); 3) initiates, monitors and titrates medicines to effect; 4) manages drug cost reimbursement; and 5) undertakes teaching, clinical audit and practice-based research. In all facets of the work they do, patient safety is paramount.

A patient-centred approach is key to these roles. All of these specialist respiratory pharmacists respond to individual patient needs to facilitate medicines administration according to patient preference. Examples of this range from tailoring the choice of inhaler device to supporting delivery of asthma biologic therapies in the person's home for self-administration, as well as agreeing shared care between hospital teams and the primary care provider for immunosuppressants in interstitial lung disease (ILD) or stimulants in narcolepsy, and supporting medicine administration for tuberculosis (TB) patients. A common theme is that potentially vulnerable patient cohorts benefit greatly from the pharmacist's intervention, *e.g.* pregnant women, those transitioning from paediatric to adult services and those with particular learning or psychosocial needs affecting medicines use or engagement.

An overview of the roles delivered by pharmacists within specific respiratory conditions or care locations

Asthma

The extent of suboptimal adherence in asthma [8], its significant deleterious impact on patient morbidity and mortality [9] and the role of the pharmacist in supporting its improvement [10–14] are widely acknowledged in the respiratory community. While the management of severe asthma has been transformed by the addition of biologic therapies to the therapeutic armoury, to receive NHS-funded therapy, the patient must have demonstrable adherence to routine preventer therapies. This has made pharmacists an essential member of the asthma MDT, and instrumental in supporting inhaler optimisation prior to biologic initiation [15–17], in supporting biologic treatment [18, 19] and in arranging safe and effective delivery of the injections to where the patient prefers to receive them [20, 21].

Supporting young adults as they transition from child to adult services is a key role for pharmacists [22, 23]. Here, they support children and young adults with decisions about starting or changing treatments and help them take more ownership of medicines taking. The increasing use of novel therapies in a comparatively young patient population has led to challenging questions about their long-term effects or impact on fertility. Similarly, pharmacists have a crucial role in supporting women with asthma who are pregnant or breastfeeding. This is a pivotal time when patients (or their family) become concerned about the impact of medicines on the baby and this can lead to them cutting down or stopping therapies. Using their expert knowledge of pharmacology and access to the latest information around treatment safety in pregnancy/breastfeeding, pharmacists can reassure and contextualise the potential for drug-associated harm and, importantly, discuss the impact of poorly controlled asthma on the pregnancy. Pharmacists are also leading the way in the development, evaluation and promotion of novel ways to measure and support adherence in asthma [24–27].

Cystic fibrosis and bronchiectasis

The specialist cystic fibrosis (CF) pharmacist has their key responsibilities outlined in the document "Pharmacy standards in cystic fibrosis care in the UK" (now in its third edition) [28]. These standards include the individualised optimisation of medicines for people with CF (pwCF), the promotion of evidence-based prescribing, the provision of advice on the management of complex drug–drug interactions arising from cystic fibrosis transmembrane conductance regulator (CFTR) modulator medicines and the immunosuppressant therapies commonly prescribed to pwCF, and the resolution of medication-related queries arising from pwCF themselves, from third party agencies and from colleagues in primary care.

Their role is varied and includes attending consultant physician-led inpatient ward rounds and multidisciplinary meetings discussing care for pwCF in the outpatient setting. They participate in annual reviews, thus reflecting on the preceding year and co-designing the treatment plan for the next year. Crucially, the pharmacist supports the pwCF during significant moments of life. These include medicines advice during pregnancy (a particularly rewarding phenomenon seen more since the introduction of Kaftrio) and for those receiving end-of-life care. As prescribers, it is often the pharmacist's responsibility to prescribe specialist medicines (including CFTR modulators, nebulised and inhaled therapies) whilst liaising with other members of the MDT to ensure any necessary monitoring requirements are undertaken.

The benefits of a dedicated CF pharmacist are well documented. Early evaluation of the role within the UK found that the CF pharmacist improved patient care, communication at the primary/secondary care interface, accuracy of prescribing, patient safety through more consistent medication monitoring, and cost savings/resource efficiencies [29]. In addition, the introduction of a CF pharmacist to the MDT also led to a decrease in medication-related adverse incidents and hospital length of stay. The role of the CF pharmacist is well received by pwCF and other members of the CF MDT [29]. pwCF who have access to a CF pharmacist are 2.4 times more likely to adhere to their medicines, resulting in a reduction in hospital presentations [30, 31]. CF pharmacists have also improved access to medicines and therefore the ability to sustain use [32].

The current model of CF care in the UK is predominantly delivered in the hospital setting through specialist CF centres. With the recent advances seen in treatments for pwCF, life expectancy is increasing and the general health of pwCF is improving; therefore, the landscape of CF care is changing. One of the challenges faced by CF pharmacists moving forwards is how best to support pwCF with their medication-related needs outside of hospital. Supporting pwCF within their own homes is likely to increase and the pharmacy service needs to follow suit. The increased life expectancy may also bring new challenges in terms of long-term effects of medications, new comorbidities and further management of drug–drug interactions. As the CF medication horizon looks bright and ever expanding, so too does the need for pharmacy services to support pwCF and multidisciplinary care teams.

COPD and integrated care

Integrated respiratory care requires insight into care delivery across the hospital and primary care settings. Increasingly, pharmacists are adopting roles that see them embedded in secondary care teams and general practice [33–35], delivering expert care and intervention to people with airways disease and complex pharmaceutical needs. These could be patients with adherence issues or polypharmacy, or those taking medicines that require monitoring or careful counselling prior to initiation, *e.g.* azithromycin or antifungal treatments. These pharmacists participate in hospital outpatient clinics [36], MDT meetings and case discussions to answer drug-related queries that arise. The expectation is that as use of biologic therapy in COPD takes off, this will be another place where pharmacists will support timely and effective care.

Being COPD experts with hospital experience means pharmacists are well placed to support primary care colleagues to better identify patients who should be referred to hospital, or support optimal care near home. They can particularly give support around cost-effective pharmacological and nonpharmacological treatments, address medicines non-adherence and correct inhaler technique, and provide support for other key tasks such as sustainable inhaler use, smoking cessation and pulmonary rehabilitation [37]. Respiratory pharmacists specialised in airways diseases and integrated care have been instrumental in furthering the sustainability agenda. Work centring around reducing the carbon footprint of inhaler use has recognised that safe and effective respiratory care goes hand in hand with sustainable respiratory care. Such projects have moved forward through the joint work of airways specialist pharmacists in primary and secondary care.

Primary care practice

Specialist pharmacists working in primary care champion different, but equally important, responsibilities from those delivered by hospital pharmacists. These include ensuring a respiratory diagnosis is secure and made in a timely fashion, prescribing initial treatments and optimising existing treatments, often managing comorbidities and ensuring appropriate onward referral. Pharmacists in general practice have a key role in maximising income by delivering government targets and using audit to optimise care and minimise waste. Data evaluating the impact of pharmacist airways clinics within general practice in a London health system showed cost savings from appropriate management and deprescribing of GBP 75 000 annually. The same data evaluation showed reductions in asthma and COPD exacerbations, and in outpatient referrals, which not only provides benefit to patient wellbeing, but is also attached to a considerable cost saving [38].

As recognised respiratory specialists in a field of generalists, primary care colleagues, including nurses and physicians, come to the pharmacist for medicines-related advice. This illustrates a healthy patient-focused team approach where the mix of knowledge and skills allows for the patient to receive care from the professional best suited to their needs. Creation of these roles is growing, so an important role for current pharmacists is to support the education, training and development of the next generation of respiratory pharmacists. This includes evaluating our contribution and creation of training and practice resources to help other practitioners deliver care robustly. For example, the development of the asthma structured medication review template, which was designed to aid practice pharmacists to appropriately carry out structured asthma reviews with patients that optimised therapy, considered the environmental impact of decisions and facilitated data collection and transfer [39].

Interstitial lung disease

The role of pharmacists within the ILD MDT is well established. A single-centre retrospective review showed a pharmacist embedded in an ILD service reviewing patients on immunomodulatory and antifibrotic treatment made 116 significant interventions in an 18-month period [40].

In many centres, weekly patient-centred discussions consider past medical and social history, radiology, pulmonary function tests and environmental and occupational factors to provide a working diagnosis. The pharmacist plays a key role in providing advice on treatment modalities and collaborating with other team members to develop holistic management plans for ILD patients. MDTs in ILD often involve several medical specialities including rheumatology, psychology and palliative care teams to address patients' symptom management and wellbeing needs [41].

As experts in medicines, pharmacists are well placed to identify drugs that may have contributed to development of the ILD [42], and lead on safe initiation and monitoring of antifibrotics and immunosuppressive medications. Usually, the MDT agrees that a particular patient is likely to benefit from pharmacological treatment and refers them to the pharmacist clinic. The pharmacist assesses patient eligibility for treatment and ensures all baseline blood tests have been completed; then, along with consideration of any cautions or contraindications to therapy and patient preference, they will initiate the most appropriate treatment. The pharmacist counsels the patient on the risks and benefits of the treatment options, offers lifestyle advice, and generally supports patients to adhere to the medicines most suitable for them. As the landscape for ILD treatment has changed, pharmacists have been integral in contributing to real-world datasets examining treatment efficacy and tolerability [43, 44].

The ILD pharmacist also provides the routine monitoring required for these therapies, addresses side-effects and optimises nonpharmacological interventions (for example pulmonary rehabilitation). Increasingly, shared care with general practice and innovations in home spirometry have allowed care to move from the outpatient setting to a virtual one. New treatment options for people with specific ILD diagnoses and the expansion of eligibility criteria for NHS England-funded nintedanib [45, 46] mean that many more patients will receive potentially life-extending treatment. Pharmacists have been pivotal in

developing treatment pathways to enable delivery of these treatments safely and efficiently, alongside innovative roles for other pharmacy staff to manage demand pressures. Clinical pharmacy technicians now also work alongside pharmacists and specialist nurses to support medicines monitoring, identification and resolution of side-effects, and liaison with homecare teams to improve the patient experience, reduce delays in initiation and increase capacity. As new treatments are licensed and patient cohorts evolve and grow, it will be essential that the role of the pharmacist grows to meet demand, and opportunities are provided to support junior colleagues to develop specialist respiratory knowledge, to create a capable and fit-for-purpose workforce for the years to come.

Tuberculosis and nontuberculous mycobacteria pulmonary disease

TB is a disease the public often wrongly assume is consigned to the history books. Unfortunately, this is not the case, and North East London has one of the highest rates of TB in the UK. People with TB are often a particularly vulnerable group. Many have multiple challenges that may have an impact on their care or outcome, including language barriers or complex social and economic needs. In addition, many patients require individualised TB regimens that suit varied working shift patterns, religious beliefs or fasting routines, to support their adherence. Pharmacist-led clinics have been developed to ensure all new active and latent TB patients are able to access medications and benefit from crucial support and counselling. Their pharmacist will confirm the patient's medication history, identify and manage any drug–drug interactions, and support optimal adherence to prevent treatment failure and minimise the development of drug resistance.

The pharmacists' participation in multidisciplinary meetings allows timely advice on appropriate therapeutic drug monitoring, drug choice and formulations queries (a particular concern in TB management, where there are frequent drug shortages). It also allows early detection and management of adverse effects. Service developments in line with patient need have led to pharmacist-led clinics that initiate and provide ongoing review for those at high risk from nontuberculous mycobacteria (NTM) treatment.

Outside the clinic setting, opportunities exist for pharmacists to influence the national agenda for TB and NTM care. These have been utilised to ensure early access to new medicines and participation in trials, and through national advisory roles on the British Thoracic Society multidrug-resistant TB clinical advisory service and the NTM Network UK pharmacist subgroup. Alongside this, pharmacists have contributed to the development of national patient information leaflets, drug monographs and the development of standards of care to support consistency of approach and the sharing of best practice.

Sleep medicine

Many sleep disorders (including narcolepsy, restless legs syndrome (RLS), sleep apnoea and insomnia) are primarily managed by medicines. These are often therapies that are controlled drugs, therefore liable to misuse or diversion, need sensitive counselling before initiation (for example around impact on fertility and need to avoid pregnancy), require dose escalation to effect, and are used in combination or off-label, thus adding complexity to their safe use. These reasons make the inclusion of pharmacists in sleep MDTs invaluable and have established a role for pharmacist-led medicines initiation and titration clinics.

Following a diagnosis of a sleep disorder, patients are referred to the pharmacist for pharmacotherapy management. The pharmacist ensures that all pre-treatment checks have been completed (*e.g.* an ECG or blood tests) and that the patient understands their disease and the management strategy, then prescribes the therapy and arranges regular follow-up to increase doses as appropriate to the pre-specified target. If there are problems, these are discussed with the physician and an action plan agreed; alternatively, if the patient responds well and the medicines are tolerated, ongoing prescribing and monitoring can be requested to be transferred to the patient's primary care physician under an agreed protocol, with annual (or in some circumstances more frequent) review with the hospital specialist physician. This has demonstrated a significant reduction in the time taken for patients to reach a therapeutic dose and improvements in medication adherence [47–50].

Besides also diversifying to support patients with interventions such as good sleep hygiene and cognitive behavioural therapy for insomnia (CBT-i), sleep disorders pharmacists have worked closely with charities including Narcolepsy UK and RLS-UK to develop patient information leaflets and fact sheets for general practitioners. These help to highlight these conditions and the current management for them. Furthermore, an NHS sleep pathway working group has been assembled to standardise care and medication access across the UK. This will undoubtedly improve the management of sleep disorders in our ever-evolving NHS.

Summary

Across respiratory medicine, there are many roles for the clinical pharmacist (table 1). These reflect the move, from the traditional pharmacist domains of supply and identification of errors or interactions, to the

TABLE 1 Summary of main roles of the respiratory or sleep specialist pharmacist

Patient counselling
Individualised care plans
Adherence monitoring and support where it needs to improve
Initiating and monitoring medicines
Identification and management of drug–drug, drug–patient and drug–disease interactions
Safe and effective delivery of highly specialist medicine, including supply chain management and access to novel drugs
Patient education on medicines-related risks and benefits
Pathway and guideline development
Support and deliver research
Teaching for healthcare professionals and trainees

prescribing and management of novel therapies, developing new ways to support and monitor adherence, the education of both patients and healthcare professionals, and the shaping of national pathways for patient care. Pharmacists utilise their medicines expertise to ensure patients receive the most appropriate treatments in a way that is accessible to them. The keen focus on putting the patient needs first, with management of supply and review of clinical outcomes, means that pharmacists can be instrumental in the timely identification of patients failing treatment and providing early review to address the reasons why. The next key steps are to deliver future expert respiratory pharmacists through contributing to their learning, experience and role-modelling, across all fields within primary and secondary care [51].

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