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Clinical skills training for pharmacists in general practice

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Clinical skills for Pharmacists

Are we equipping pharmacists for more patient-facing roles in general practice?

Briegen Girvin and Diane Wilson

This article focuses on the teaching and acquisition of clinical skills for pharmacists. The aims of the article are to:

- Describe the clinical skills currently taught to pharmacists both at undergraduate and postgraduate level and make comparisons with how clinical skills are taught to medical students.
- Explore the published literature focusing on clinical skills for pharmacists in terms of:
 - Research to define the clinical skills set that would be useful for pharmacists
 - The content of clinical skills courses developed to specifically meet the learning needs of pharmacists.
- Make recommendations regarding clinical skills teaching/training for pharmacists.

There are various definitions of clinical skills in the literature, of which we have used the following:

‘A clinical skill may contain one or several different domains such as: physical examination skills, practical procedure, communication skills, and management. Acquiring clinical skills includes three components: learning how to perform certain movements (procedural knowledge), why one should do so (underlying basic science knowledge), and what the findings might mean (clinical reasoning).’¹

Clinical skills are required to assess a patient, diagnose a condition, decide on treatment, monitor response to treatment and to recognise when symptoms or signs may indicate serious disease. Although pharmacists are experts in medicines rather than diagnosis, they still need the clinical skills required to monitor response to treatment and to detect abnormalities that require onward referral to a medical doctor.

Ensuring that pharmacists are equipped with the necessary clinical skills has become all the more important with the increase in numbers of pharmacists working in primary care.²

Pharmacists in primary care

The concept of pharmacists working in general practices is not new and various initiatives to promote this date back to the 1990s.³ However, there has been a call for a ‘far greater use of pharmacists’ in the primary care setting⁴ because of their expertise in medicines and the current recruitment crisis, with predicted shortfalls in numbers of GPs and nurses over the next decade.⁵ This has resulted in a rapid increase in numbers of pharmacists working in primary care. The various schemes whereby pharmacists are working in general practice are well underway in Northern Ireland,⁶ England,⁷ and Scotland⁸ and studies are emerging on the specific benefits of some of the United Kingdom (UK) pilot schemes. For example, over a 9 month period, 5.4 pharmacists (whole time equivalents) in Dudley Clinical Commissioning Group (CCG) identified 23,172 interventions estimated to save the CCG £1million. Over 4 months, the pharmacists saved 628 GP appointments

and an additional 647 hours that the GPs would have spent on medication reviews and managing repeat prescribing.⁹ Pharmacists working in general practices deliver a range of interventions with favourable results in numerous areas of chronic disease management and prescribing of medicines.¹⁰ In addition to this, and most importantly, patients find the extended role of pharmacists working and prescribing within general practice to be an acceptable model of health care delivery.¹¹

The roles that pharmacists can undertake in primary care have been described in detail elsewhere¹² and have been classified into three main categories, some examples of which are listed below:

1. **Medication-related administration:** e.g. medicines reconciliation of hospital discharge and clinic letters, responding to medicines queries from GPs and patients.
2. **Strategic quality safety and education:** e.g. audit and review of the practice systems and protocols focusing on acute and repeat prescribing, staff education on safe prescribing systems, analysis of prescribing data and auditing prescribing against evidence-based guidelines, implementing formulary choices, ensuring patients are treated according to national guidelines, responding to medication safety alerts.
3. **Patient-centred clinical roles:** e.g. chronic disease management clinics. Some pharmacists are also participating in telephone triage, assessment and treatment of acute illnesses within their competence but most pharmacists require additional training for these roles.

Pharmacists' undergraduate and postgraduate training in medicines positions them to confidently fulfil the roles described in areas 1 and 2 above but are we equipping pharmacists with the necessary clinical skills to undertake the roles within area 3? An article on this subject has stated "...the recent initiatives in developing pharmacists to deliver patient-facing care in general practice settings require the extension of pharmacists' clinical skills as a priority".²

This is consistent with evidence from studies and questionnaires suggesting some pharmacists do not feel confident with regard to their clinical skills.¹³⁻¹⁵

Pharmacists' confidence regarding their clinical skills

In a questionnaire sent to pharmacist prescribers in Northern Ireland in 2011, from 105 respondents, only 5% of current prescribers felt that they were 'excellent' at undertaking physical examination of patients, while 50% felt 'adequate' in undertaking this activity.¹³ In a questionnaire sent to pharmacist prescribers in Great Britain in 2016, of which 648 pharmacist prescribers responded, the authors reported that some respondents felt they lacked clinical assessment skills after qualifying and did not always feel confident in diagnosing. It was also highlighted that pharmacists do not generally receive opportunities to develop physical assessment skills as part of their training.¹⁴

In a secondary care study, only two (out of ten) pharmacists, both prescribing in the specialty of nutrition, stated that they would physically examine patients.¹⁶ This is also consistent with the professional culture of pharmacy, where pharmacists are seen as experts in medicines, not diagnoses.^{17,18}

In a study designed to equip pharmacists to take on new roles in primary care, again some concerns were expressed by pharmacists regarding their clinical skills when taking on this role.¹⁵ Some of the participants, especially those who already had experience working in primary care, felt that their role should focus on their expertise in medicines optimisation and medicines management. For example, one pharmacist stated

'..medicines are our training, that is what we know, so we should be trying to do everything we can to make sure medicines are prescribed safely and appropriately, not trying to diagnose musculoskeletal pain..'

In contrast to this, pharmacists with less experience in primary care or those working in community pharmacies were more open to extending their roles into managing acute conditions, triage and clinical examination. The study authors concluded that future training programmes should be targeted at pharmacists taking on new roles in general practice. They stated that the training should include clinical skills teaching, including the skills required to manage minor ailments and to run chronic disease clinics and be delivered by primary care practitioners.¹⁵

The following paragraphs outline the clinical skills currently taught to pharmacy students and postgraduate pharmacists, making comparisons to the medical curriculum.

Clinical skills taught to pharmacists

Background on training to become a pharmacist

In order to practise as a pharmacist in the UK, students must undergo a 4 year Master of Pharmacy degree. This is a science degree, known as the MPharm. This is then followed by completion of one year of pre-registration training, which is a period of paid employment normally in a community or hospital pharmacy, during which a trainee is required to develop a portfolio of evidence and demonstrate their competence whilst being observed at work. On completion of this one year of training, the trainee will undertake a pre-registration examination, which if passed, allows the trainee to register as a pharmacist. Once the pharmacist has at least two years of appropriate patient-orientated experience in a UK hospital, community or primary care setting following their pre-registration year, they may apply to undertake an Independent Prescribing (IP) qualification.

The General pharmaceutical Council (GPhC), the regulatory body for pharmacists in Great Britain, sets the learning outcomes for both the undergraduate MPharm degree and the Independent Prescribing (IP) programme in the UK.

MPharm degree

There are 58 learning outcomes in standard 10 of the GPhC's Standards for the initial education and training of pharmacists¹⁹ and those most relevant to clinical skills have been listed in Box 1.

Box 1: GPhC Standard 10 Outcomes for the MPharm (pharmacy undergraduate) degree related to clinical skills¹⁹

- Respond appropriately to medical emergencies, including provision of first aid
- Collaborate with patients, the public and other healthcare professionals to improve patient outcomes
- Identify and employ the appropriate diagnostic and physiological testing techniques in order to promote health and to inform clinical decision making
- Communicate with patients about their prescribed treatment
- Establish and maintain patient relationships while identifying patients' desired health outcomes and priorities
- Obtain and record relevant patient medical, social and family history
- Communicate information about available options in a way which promotes understanding
- Support the patient in choosing an option by listening and responding to their concerns and respecting their decisions
- Conclude consultation to ensure a satisfactory outcome
- Maintain accurate and comprehensive consultation records

UK universities providing the MPharm degree are free to design and develop their programmes in different ways, but must ensure that their curricula meet all learning outcomes. Within the MPharm degree at the School of Pharmacy, Queen's University Belfast, students are taught the following in relation to clinical skills.

Year 1: Within the module 'Practising as a Pharmacist,' students receive their first introduction to communication and consultation skills. These skills are integrated vertically within the curriculum, spiralling upwards – for example from year 1 when the students practise giving advice on simple 'over the counter' (OTC) medicines to year 4 where they encounter complex interactions using case studies in workshops, simulated patients in a high fidelity simulated environment and real patients in hospital placements.

Within the module 'Physiology for Pharmacy,' students are taught how to measure blood pressure (with an aneroid sphygmomanometer), peak flow and to perform spirometry tests. They are also given an introduction to the use of an auroscope and perform some hearing tests (including Rinne and Weber's test). Students are introduced to the use of an ophthalmoscope and perform some visual tests including visual acuity, field of vision and pupillary response to light.

Year 2: Within the module 'Applied Clinical Pharmacology,' students are taught clinical skills allowing them to interpret patients' case notes, devise appropriate therapeutic regimens, advise prescribers on rational drug therapy for individual patients, devise appropriate outcome measures for monitoring of therapy and develop individualised counselling skills with patients. This module includes a hospital placement where students optimise medicines for patients and develop the clinical skills of medication history-taking and reconciliation, patient counselling and communicating professionally with patients, peers and other members of the pharmacy and wider healthcare team. Students also complete a community pharmacy placement prior to entering year 3, where they

observe patient consultations and clinical interventions which are undertaken for example, in response to prescriptions and medication reviews.

Year 3: Within the module 'Clinical Therapeutics,' students are taught about clinical laboratory tests, how to interpret them and their use in clinical practice and diagnoses. Further placements allow students to develop and extend the medication history-taking, medicines reconciliation and medicines optimisation skills taught in year 2. Within the 'Pharmacy Practice' module, students review prescriptions and optimise medicines following discussion with the prescriber and undergo patient consultations in a high fidelity simulated pharmacy setting. During year 3, pharmacy students also join medical students during their GP rotation modules for a joint session on patient care to follow the 'prescription journey'. This involves undergoing a patient consultation (in a simulated clinic) including patient assessment, making a diagnosis and writing a prescription. A prescription is written and then dispensed in a high fidelity simulated pharmacy setting.

Year 4: Within the module 'Pharmacy Practice: Responding to Symptoms,' students learn about the aetiology of minor illness and differential diagnosis of minor ailments from more serious disease. Minor illnesses covered include coughs, colds, sore throats, women's health, gastrointestinal tract, travel health, pain, eye ear and mouth, skin conditions and children's health. Students gain knowledge and skills to respond effectively to symptoms presented by patients in community pharmacy using an evidence-based approach. They develop clinical skills enabling them to formulate differential diagnosis of disease, make appropriate referrals, offer advice on treatment and monitor treatment outcomes.

Within the module 'Advanced Pharmaceutical Care,' students further develop their clinical skills to optimise medication for the patient. During a half-day workshop, students are given an introduction to physical examination skills, including cardiovascular assessment (including blood pressure, heart rate and a simplified praecordial examination) and respiratory examination (including respiratory rate and listening to breath sounds) and allowed to practise these skills on simulated patients in small groups. Students are also taught basic first aid skills and cardiopulmonary resuscitation.

Independent Prescribing programme

The Department of Health's definition of independent prescribing is 'prescribing by a practitioner (e.g. doctor, dentist, nurse, pharmacist) responsible and accountable for the assessment of patients with undiagnosed or diagnosed conditions and for decisions about the clinical management required, including prescribing'. This differs from supplementary prescribing where there is a partnership between the independent prescriber (a doctor or dentist) and a supplementary prescriber to implement an agreed patient-specific Clinical Management Plan, with the patient's agreement.²⁰ A common set of competencies which should underpin prescribing regardless of professional background are detailed in the Royal Pharmaceutical Society's Competency Framework for all Prescribers²¹ but no guidance is given regarding the recommended clinical skill set for the various professions who intend to prescribe.

There are 50 different providers of the IP programme for pharmacists across the UK and the GPhC learning outcomes and suggested indicative content relating to clinical skills is listed in Box 2.²²

Again, as in the MPharm degree, providers of the IP programme may design and deliver the course content in different ways provided the outcomes are achieved.

Box 2: GPhC Learning Outcomes and indicative content for the Independent Prescribing course related to clinical skills²²

Learning Outcomes

- Describe the pathophysiology of the condition being treated and recognise the signs and symptoms of illness, take an accurate history and carry out a relevant clinical assessment where necessary
- Use common diagnostic aids e.g. stethoscope, sphygmomanometer
- Be able to use diagnostic aids relevant to the condition(s) for which the pharmacist intends to prescribe, including monitoring response to therapy
- Apply clinical assessment skills to:
 - inform a working diagnosis
 - formulate a treatment plan for the prescribing of one or more medicines, if appropriate
 - carry out a checking process to ensure patient safety
 - monitor response to therapy
 - review the working differential diagnosis and modify treatment or refer
 - consult/seek guidance as appropriate

Indicative content of the IP programme to enable pharmacists to meet the clinical skills outcomes listed above includes:

- Accurate assessment, history-taking, and effective communication and consultation with patients and their parents/carers
- Knowledge of the range of models of consultation and appropriate selection for the patient
- Formulating a working diagnosis
- Confirmation of diagnosis/differential diagnosis – further examination, investigation, referral for diagnosis
- Principles and methods of patient monitoring
- Chemical and biochemical methods for monitoring the treatment of the condition(s) for which the pharmacist intends to prescribe on qualification and responses to results
- Clinical examination skills relevant to the condition(s) for which the pharmacist intends to prescribe
- Recognition and responding to common signs and symptoms that are indicative of clinical problems. Use of common diagnostic aids for assessment of the patient's general health status; e.g. stethoscope, sphygmomanometer, tendon hammer, examination of the cranial nerves.
- Assessing responses to treatment against the objectives of the treatment plan/clinical management plan
- Working knowledge of any monitoring equipment used within the context of the treatment/clinical management plan

In Northern Ireland, the IP course has been provided for Northern Irish pharmacists through the Northern Ireland Centre for Pharmacy Learning and Development (NICPLD) since 2006. Since 2016, the course has also been made available to pharmacists from England, Scotland and Wales. The clinical skills taught in this IP course are shown in Box 3. Pharmacists are taught that for most conditions, medical doctors will make the formal diagnosis but that it is important to be able to recognise when something is normal or abnormal (e.g. heart sounds) and refer any abnormal findings to the medical doctor. The focus is therefore on acquiring a skill set to detect abnormality rather than establish a diagnosis and to monitor response to treatment or disease progression.

Box 3: Clinical skills on the IP programme for pharmacists in Northern Ireland

Consultation skills

Head, Eye, Ear Nose, Throat Mouth and Neck (HEENTMN) including cervical lymph nodes and sinuses

Use of ophthalmoscope and auroscope

Cardiac (praecordial) examination

Respiratory examination

Vital signs (pulse, blood pressure, respiratory rate)

Abdominal examination

Neurological examination - motor and sensory (upper limb) and cranial nerves

Students are examined on the clinical skills listed in Box 3 via six Objective Structured Clinical Examination (OSCE) stations where they must demonstrate the skills on simulated patients. Students are also examined on the specific clinical skills that are required for their chosen clinical area by their Designated Medical Practitioner (i.e. medical mentor) during a period of 12 days of 'in-practice' training within the IP programme. This allows the students to build confidence and competence in the clinical skills required for their own speciality in a 'real practice' environment.

We are not aware of any research published in the UK regarding what clinical skills should be taught to pharmacists, especially in this changing environment where they are taking on more clinical roles. Whether or not the general clinical skills listed in Box 3 are the most useful to pharmacists has not been explored. As previously stated, different MPharm and IP programme providers may vary in terms of what and how clinical skills are taught. Outside of the MPharm and IP programme, we found two publications where the authors described courses designed to equip practising pharmacists with clinical skills. The first was conducted in 2011 and was delivered to a group of 50 qualified pharmacists (supplementary and independent prescribers or pharmacists working to achieve this status) working in community or hospital pharmacy.²³ The clinical skills taught were:

- General physical examination (hands, face, mouth and eyes)
- Vital signs recording (temperature, pulse, respiratory rate and blood pressure)

- Examination of the eye (visual fields, acuity and pupil reaction)
- Examination of the ear
- Respiratory examination

The second publication describes a study conducted in 2017 that was designed to explore pharmacists' perceptions of primary care roles both before and after their attendance at a course designed to prepare them for the primary care role.¹⁵

The clinical skills taught on the course were:²⁴

- Vital signs (pulse rate, respiratory rate, temperature, blood pressure, oxygen saturations)
- ENT: External ear, otoscopy, nasal examination, throat examination and swab, cervical lymph nodes
- Eye examination: visual acuity, visual fields, examination of pupil, eye movements, examination of external eye, eversion of eyelids
- Respiratory examination
- Diabetic leg examination

Interestingly the skills described in both publications were similar which implies that there seems to be a consensus around what clinical skills should be taught to pharmacists.

Clinical skills taught to medical students

In the recently updated Outcomes for Graduates, the General Medical Council (GMC) sets out outcomes for newly qualified doctors within three domains – professional values and behaviours, professional skills and professional knowledge.²⁵ Within the domain of professional skills, many aspects involve competency in consultation skills, diagnosis and medical management. The updated document will be supplemented by a list of practical procedural skills (due for publication in spring 2019), which is a minimum set of practical skills that newly qualified doctors must have when they start in clinical practice. Box 4 below outlines some of the professional skills listed in the GMC document.

Box 4: Professional skills for medical graduates²⁵

Communicate effectively, openly and honestly with patients, their relatives/carers/other advocates and colleagues applying patient confidentiality

Carry out an effective consultation with a patient

Work collaboratively with patients and colleagues to diagnose and manage clinical presentations safely in all care settings

Perform a range of diagnostic, therapeutic and practical procedures safely and effectively, identifying those for which they need supervision to ensure patient safety

Work collaboratively with patients, their relatives/carers/other advocates to make clinical judgements and decisions, including providing compassionate interventions or support for patients who are nearing or at end of life

Provide immediate care in medical and psychiatric emergencies

Recognise when a patient is deteriorating and take appropriate action

Prescribe medications safely, effectively and economically and be aware of common causes and consequences of prescribing errors

Use information safely and effectively in a medical context

Formal clinical skills teaching and assessment are integral to all medical curricula - and medical students' acquisition of clinical skills includes the history-taking, physical examination and procedural skills relating to **all** systems. For example, skills relating to the urinary system could include abdominal examination, urinalysis, mid-stream urine sampling and urinary catheterisation.

The complexity of clinical skills required by practising clinicians is wide-ranging and competency in clinical skills is assessed throughout the undergraduate medical degree and supported by months of clinical placements. Medical students have the opportunity to practise essential clinical and communication skills within a simulated environment as well as during clinical placements. Formal recording (often through an electronic portfolio), supervision, receiving tutor feedback and reflection are all important within this learning process to bring about professional competence in these varied clinical skills. Consequently, medical clinical skills training is focused towards producing clinicians who are confident in disease diagnosis as well as management.

In contrast to this, pharmacy undergraduate students receive much less clinical skills teaching compared with medical students. Although communication and consultation skills are integral to the MPharm degree, history-taking skills are limited to those required for managing minor ailments within a community pharmacy setting. Pharmacy students receive much less physical examination or procedural skills training than medical students and have limited opportunities to practise these skills, with their placements focusing more on practising medication history-taking and medicines reconciliation. Pharmacists undertaking the IP programme have some opportunity to practise the physical examination and procedural skills relevant to their chosen speciality during the 12 days 'in-practice' training with their Designated Medical Practitioner.

Conclusion and recommendations

Published studies in the UK regarding clinical skills for pharmacists are sparse but an emerging theme is that pharmacists may lack confidence in this area. We found no published research in the UK to inform the clinical skills training content of the MPharm, IP programme or other postgraduate courses for pharmacists. There is less emphasis currently on physical examination or procedural skills within the MPharm degree compared to medicine, which may be expected in view of the traditional focus for each profession. It follows that most newly qualified pharmacists in the UK will have limited experience in terms of physical contact with patients and, in some cases, their first opportunity to learn more about physical assessment skills is within the IP programme. It may be

time to introduce more clinical skills into the MPharm degree to bridge the gap between the MPharm and the IP programme, although this will not be without its challenges. The MPharm is a science degree designed to produce pharmacists who are experts in medicines, who may go on to work in varied fields such as community pharmacy, hospital pharmacy, general practice, research or industry. It could be difficult to include more clinical skills training into what is an already expansive and busy curriculum. It follows that the IP programme may be the preferred programme to fully develop the required clinical skills for pharmacists, with an incremental introduction to these skills occurring within the MPharm degree. We suggest that the pre-registration and early years of practice should also offer the opportunity to maintain and develop clinical skills further.

The roles of pharmacists working in general practice are diverse and evolving. Clearer definitions of the various roles that pharmacists undertake in primary care could help to better define the clinical skill set required for each role. Whilst the role of the pharmacists is not to replace other clinicians who diagnose, we believe there is potential to more specifically define what their clinical skill set should be, depending on the roles they choose to take on.

Exploring whether IP course providers are teaching the most useful and relevant clinical skills and whether pharmacists are using these skills and feel confident in performing them and interpreting their findings, would be an interesting focus for future research. This research could then inform GPhC learning outcomes and help provide more clearly defined guidance on the content of clinical skills teaching on the MPharm degree, IP programmes and any postgraduate courses to prepare pharmacists for their roles in primary care.

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Conflict of Interests: None

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Conflict of Interests: None

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