Clinical skills training for pharmacists in general practice

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Clinical skills are becoming increasingly important for pharmacists as they take on more patient-facing roles in primary care. In this article, the authors discuss the clinical skills currently taught to pharmacists during undergraduate and postgraduate training, and how this training could be expanded.

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 specifically to 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).”

Clinical skills are required to assess a patient, diagnose a condition, decide on treatment, monitor response to treatment and 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 pri-
mary care.  

**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.  

However, there has been a
call for a “far greater use of pharmacists”
in the primary care setting because of
their expertise in medicines and the cur-
cent recruitment crisis, with predicted
shortfalls in numbers of GPs and nurses
over the next decade. This has resulted
in a rapid increase in the numbers of
pharmacists working in primary care.
Various schemes supporting pharma-
cists working in general practice are well
underway in Northern Ireland, England and
Scotland, and studies are emerging
on the specific benefits of some of the
UK pilot schemes. For example, over
a nine-month period, 5.4 pharmacists
(whole-time equivalents) in Dudley CCG
identified 23,172 interventions estimated
to save the CCG £1 million. Over
four 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.

Pharmacists working in general prac-
tices deliver a range of interventions with
favourable results in numerous areas of
chronic disease management and pre-
scribing of medicines. 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 healthcare
delivery. The roles that pharmacists
can undertake in primary care have been
described in detail elsewhere and have
been classified into three main catego-
ries, some examples of which are listed
below:

1. Medication-related administration, eg medicines reconciliation of hospital discharge and clinic letters, responding
to medicines queries from GPs and patients.
2. Strategic quality safety and education, eg audit and review of the practice sys-
tems 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, imple-
menting formulary choices, ensuring
patients are treated according to
national guidelines, responding to med-
ication safety alerts.
3. Patient-centred clinical roles, eg
chronic disease management clinics.
Some pharmacists are also participat-
ing in telephone triage, and assessment
and treatment of acute illnesses within
their competence but most pharmacists
require additional training for these roles.

Pharmacists’ undergraduate and post-
graduate training in medicines posi-
tions them to fulfil the roles described
in areas 1 and 2 above confidently 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 pri-
ority”. This is consistent with evidence
from studies and questionnaires sug-
gesting that some pharmacists do not
feel confident with regard to their clinical
skills.

**Pharmacists’ confidence regarding their clinical skills**

In a questionnaire sent to pharma-
cist prescribers in Northern Ireland in
2011, out of 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.

In another questionnaire sent to pharma-
cist prescribers in Great Britain in 2016,
to which 648 responded, some respond-
ents felt they lacked clinical assessment
skills after qualifying and did not
always feel confident in diagnosing. The
questionnaire also highlighted that phar-
macists do not generally receive oppor-
tunities to develop physical assessment
skills as part of their training.

In a secondary care study, only two
(out of 10) pharmacists, both prescrib-
ing in the specialty of nutrition, stated
that they would physically examine
patients. This is also consistent with
the professional culture of pharmacy,
where pharmacists are seen as experts
in medicines, not diagnosis.

In a study designed to equip phar-
macists to take on new roles in pri-
mary care, again some concerns were
expressed by pharmacists regarding
their clinical skills when taking on these
roles. Some of the participants, espe-
cially 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 pharma-
cist stated: “…medicines are our train-
ing, 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 mus-
culoskeletal pain”.

In contrast, pharmacists with less
experience in primary care or those
working in community pharmacies were
more open to extending their roles to
managing acute conditions, triage and
clinical examination. The study authors
concluded that future training pro-
grammes should be targeted at phar-
macists taking on new roles in general
practice. They stated that the training
should include clinical skills teaching,
such as the skills required to manage
minor ailments and to run chronic dis-
ease clinics.

**Clinical skills taught to pharmacists**
The following section outlines the clin-
ical skills currently taught to pharmacy
students and postgraduate pharmacists,
making comparisons with the medical
curriculum.

**Background on training to become a pharmacist**

In order to practise as a pharmacist in
the UK, students must undergo a four-
year science degree leading to Master
of Pharmacy (MPharm). This is followed
by completion of one year of pre-regis-
tration 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
evidence and demonstrate their com-
petence while being observed at work.
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 diagnosis. 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 and dispensing a prescription 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 the differential diagnosis of minor ailments from more serious disease. Minor illnesses covered include: coughs, colds and sore throats; women’s health problems; gastrointestinal disorders; travel health; pain, eye, ear and mouth conditions; 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 dis-

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Table 1. General Pharmaceutical Council’s Standard 10 for the MPharm (pharmacy undergraduate) degree: learning outcomes most relevant to clinical skills¹⁹

| 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, 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) and peak flow, and to perform spirometry tests. They are also given an introduction to the use of an ophthalmoscope and perform some hearing tests (including Rinne and Weber tests). Students are introduced to the use of an ophthalmoscope and perform some visual tests including visual acuity, visual field and pupillary response to light.
| Within the module Therapeutics, students are taught about 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.
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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, which includes cardiovascular assessment (including blood pressure and heart rate measurement, and a simplified praecordial examination) and respiratory examination (including respiratory rate and listening to breath sounds), and are 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 (eg 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 a patient-specific clinical management plan, with the patient’s agreement. A common set of competencies that should underpin prescribing regardless of professional background are detailed in the Royal Pharmaceutical Society’s Competency Framework for all Prescribers 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 independent prescribing programme for pharmacists across the UK and the GPhC’s learning outcomes and suggested indicative content relating to clinical skills are listed in Table 2. Again, as in the MPharm degree, providers of the independent prescribing programme may design and deliver the course content in different ways, provided the outcomes are achieved.

In Northern Ireland, the independent prescribing programme 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 course are shown in Table 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 (eg heart sounds) and refer any abnormal findings to the medical doctor. The focus is therefore

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**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, eg 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 independent prescribing 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, eg 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

Table 2. General Pharmaceutical Council’s learning outcomes and indicative content for the independent prescribing programme relating to clinical skills. (NB. These learning outcomes are due to be revised in 2019)
on acquiring a skill set to detect abnormality rather than establish a diagnosis, and to monitor response to treatment or disease progression.

Students are examined on the clinical skills listed in Table 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 (ie medical mentor) during a period of 12 days of ‘in practice’ training within the independent prescribing programme. This allows the students to build confidence and competence in the clinical skills required for their own specialty in a ‘real practice’ environment.

Research on teaching clinical skills to pharmacists

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 Table 3 are the most useful to pharmacists has not been explored. As previously stated, different MPharm and independent prescribing programme providers may vary in terms of what and how clinical skills are taught.

Outside of the MPharm and independent prescribing 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. 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 these roles. The clinical skills taught on the course were:

- Vital signs (pulse rate, respiratory rate, temperature, blood pressure, oxygen saturations)
- Ear, nose and throat (external ear, otoscopy, nasal examination, throat examination and swab, cervical lymph nodes)
- Eye examination (visual acuity, visual fields, pupil, eye movements, 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 GMC sets out outcomes for newly-qualified doctors within three domains: professional values and behaviours; professional skills; and professional knowledge. 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. Table 4 outlines some of the professional skills listed in the GMC document.

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, midstream urine sampling and urinary catheterisation.

The complexity of clinical skills required by practising clinicians is wide

### Table 3. Clinical skills included in the independent prescribing programme in Northern Ireland

<table>
<thead>
<tr>
<th>Skill Description</th>
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<tbody>
<tr>
<td>Consultation skills</td>
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<tr>
<td>Head, eye, ear, nose, throat, mouth and neck (HEENTMN) examination, including cervical lymph nodes and sinuses</td>
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<tr>
<td>Use of the ophthalmoscope and auroscope</td>
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<tr>
<td>Cardiac (praeordial) examination</td>
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<tr>
<td>Respiratory examination</td>
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<tr>
<td>Vital signs (pulse, blood pressure, respiratory rate)</td>
</tr>
<tr>
<td>Abdominal examination</td>
</tr>
<tr>
<td>Neurological examination (motor and sensory [upper limbs] and cranial nerves)</td>
</tr>
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• 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

Table 4. GMC’s professional skill requirements for newly-qualified doctors23

Conclusion
Published studies in the UK on the topic of 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 course, independent prescribing programme or other postgraduate courses for pharmacists. There is less emphasis currently on physical examination or procedural skills within the MPharm degree compared with 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 independent prescribing programme.

It may be time to introduce more clinical skills into the MPharm degree to bridge the gap between the MPharm and the independent prescribing 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 already an expansive and busy curriculum. It follows that the independent prescribing programme may be the preferred course 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 better define the clinical skill set required for each role. While the role of pharmacists is not to replace other clinicians who diagnose, we believe there is potential to define more specifically what their clinical skill set should be.

Exploring whether independent prescribing programme providers are teaching the most useful and relevant clinical skills to pharmacists, and whether pharmacists use 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, independent prescribing programmes and any postgraduate courses that prepare pharmacists for their roles in primary care.

References
Declaration of interests

None to declare.

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