Prescribe: an e-learning initiative to improve prescribing

ANGELA DOWDEN

Ensuring that patients receive the right medicines at the appropriate dosages is a complex skill, with potentially serious consequences if mistakes are made. Prescribe is a recently launched online education programme designed to increase prescribing competency among medical students, new doctors and other prescribing professionals.

Free to access for all students at UK universities and NHS-affiliated organisations, Prescribe is a collaboration between the British Pharmacological Society and Health Education England’s e-Learning for Healthcare (e-LfH) programme. An online education programme to help healthcare students “develop a firm grounding in the principles of clinical pharmacology and use of medicines more generally,” its wider aim is to improve the prescribing expertise and confidence of trainee doctors, ultimately resulting in fewer medication mistakes.

As the e-learning programme has only been up and running since January 2017, it is still early days in terms of evaluating the project and who will engage with it. However, it is envisaged that the biggest users will be medical students, plus those in allied health professions who can now prescribe, such as pharmacists and nurses. Doctors who have just graduated and who are doing their foundation years are also prime candidates because they are usually prescribing quite frequently but with a very limited experience base.

Preparing new doctors for the challenges of prescribing

Perhaps unsurprisingly, given that the stakes can be so high, drug prescribing is an area that newly qualified medics have traditionally felt nervous about and lacked confidence in. “Eight or nine years ago, it was clear from various surveys [of prescribing practice] that when junior doctors left medical school and entered the wards, they weren’t as prepared as...”

Prescription mistakes: a fact finder

Globally, the cost associated with medication errors has been estimated at US $42 billion annually or almost 1% of total global health expenditure, according to the WHO. In March 2017, it launched a global initiative to reduce severe, avoidable medication-associated harm in all countries by 50% over the next five years.

The EQUIP study showed a 10.3% error rate for prescriptions written by foundation year 2 doctors across 19 NHS hospitals in north west England, compared with an overall prescription error rate of 8.9%. Fortunately, most errors were intercepted by pharmacists before they caused harm.3

In a prospective study in 20 UK hospitals, error rates for all doctors in training were significantly higher than rates for medical consultants. Doctors who were one or two years in training were more than twice as likely to prescribe erroneously.4

In newly qualified doctors, mistakes can be categorised into knowledge-based mistakes (arising from poor knowledge of practical aspects of prescribing and lack of support) and rule-based mistakes (resulting from inappropriate application of knowledge and following erroneous routines or orders).5

In a systematic review of prescriptions for hospital inpatients, errors were most common with antimicrobials and more common in adults than in children. Incorrect dosage was the most common error.6

In the PRACtICe study, around one in 20 prescriptions in general practice involved errors, either in the prescription itself or related to inadequate clinical monitoring of the medicine being prescribed. This affected one in eight of all patients. Medicines for the cardiovascular system, skin, central nervous system (including painkillers) and infections accounted for over half of all errors.7
ANALYSIS | Prescribe e-learning

**Figure 1.** An example of a knowledge check multiple-choice question within Prescribe (from the ‘administration of drugs using a nebuliser’ section of the drug administration module)

**Figure 2.** An example of a self assessment case study multiple-choice question within Prescribe (from the ‘writing prescriptions at discharge from hospital’ section of the prescription writing module)

they might be for the kinds of challenge they were facing – pace of life on wards, the number of prescriptions they might need to write and the number of drugs that would pass through their hands,” explains Simon Maxwell, professor of student learning (clinical pharmacology and prescribing) at the University of Edinburgh, and clinical lead for the Prescribe project.

He adds: “It was also clear at that point that preparation was fairly variable – there were some places where medical students really had quite a lot of teaching about medicines by strong groups of enthusiasts in the area, but there were other places where that wasn’t as well co-ordinated. About the same time, around 2008/9, studies commissioned by the GMC were showing that there was a significant error rate among prescriptions that were being written.”

These factors, claims Professor Maxwell, often fuelled by medical schools having crowded curriculums struggling to find enough teaching hours to dedicate to the complex topic of prescribing, formed the background from which the Prescribe programme arose.

He continues: “A short-life working group called the Safe Prescribing Working Group was convened by the Medical Schools Council and the GMC, which contained quite a few stakeholders in the area of prescribing.

“What came out from this working group was that there should be a clear curriculum identified for those learning to prescribe, as well as a clear assessment of competencies so that all medical schools and their medical students would be able to demonstrate that they’ve met the competencies in that curriculum.”

The third outcome from the working group was the need for a national learning strategy to support training for prescribing. It was this outcome that led to the British Pharmacological Society/e-LfH collaboration, and ultimately the development of Prescribe.

The scope of the project developed over a number of years but the online educational programme is now finally available for users to access.

**Prescribing education fit for purpose**

Currently, there are around 27 sessions of learning written by 15 authors, divided into eight discrete modules. These are: prescription writing, dose calculations, reviewing prescriptions, medication history-taking, communication, drug administration, reporting adverse drug reactions, and obtaining information to support rational prescribing. All are accessible via the e-LfH website1 after registration at the site and all relate to various activities that might be undertaken by junior doctors in the NHS.

“We’ve tried to focus on what users will need and to understand the context for the people we are trying to reach,” says Professor Maxwell. To this end, everyone involved with the development and writing of Prescribe has a clinical role within the wards of NHS hospitals so they understand the day-to-day complexities of prescribing.

**Plugging gaps in knowledge**

Alison Eggleton, writer and senior editor for the Prescribe project, was previously a consultant pharmacist in academic clinical pharmacy practice at Addenbrooke’s Hospital, explains that junior doctors rarely struggle with drug choice but can fall down on other areas such as making the correct adjustments in dosage for those with renal or liver impairments or the finer points of how to write a hospital drug chart properly – all areas that Prescribe addresses.

She adds: “For example, students need to know not just how to write a drug chart safely in the first place but, once it’s written, how to review it and make sure it stays safe. They need to understand the responsibilities of rewriting a drug chart, which is just as much an act of prescribing as the initial prescription writing in the first place.”

Other areas covered by the Prescribe programme include how to prescribe high-risk drugs like insulins and warfarin, how to identify and report drug interactions and adverse drug reactions, and how to prescribe in high-risk groups such as pregnant women, the elderly and children. The drug administration module also has comprehensive sections on areas such as giving drugs subcutaneously, via a nebuliser or intravenously.

In some cases, notes Ms Eggleton, Prescribe is pulling together pre-existing information into a convenient learning resource, whereas in others it is plugging significant gaps in prescribing knowledge.

“For example, the BNF has a section on how to prescribe intravenous infusions but it provides nowhere near enough detail to actually do it safely, so with Prescribe we are now making sure prescribers know how and where to access information that is less readily available.”

**User-friendly interface**

Practically, Prescribe can be dipped into as the user requires. Professor Maxwell states that the project plans to stay mindful of the usefulness of learning pathways and that “indeed some sections say that you really shouldn’t be doing them unless you’ve done a previous one that relates to it.” For now, though, there’s no requirement for the programme to be followed...
in any particular order and “if someone wants to just do the module on intravenous fluids, they can jump straight to it and not necessarily do anything else.”

Along the way, users get “knowledge check” multiple-choice questions to make sure the information they are receiving is being assimilated (see Figure 1), while at the end of each session, students complete a “self assessment” section – again in a multiple-choice style – in which they apply their learning to a realistic case study scenario (see Figure 2).

**Underlying principles**
The prescribing principles that underpin the Prescribe programme come from the recently updated Prescribing Competency Framework, which outlines a common framework for all prescribers. This includes nonmedical healthcare professionals such as pharmacists and nurses as well as medics.

“Prescribe links entirely to the competency framework for any prescriber at any time in their career,” says Ms Eggleton, but she adds that final year medical students in particular can find it useful in helping them prepare for their Prescribing Safety Assessment examination. Developed jointly by the British Pharmacological Society and the Medical Schools Council, the Prescribing Safety Assessment is a test of medical students’ prescribing competencies that is now compulsory for all foundation year 1 students to pass. Those who do not pass in the final year of their medical degree are given the opportunity to re-sit the assessment during their first foundation year, after undergoing a programme of remediation.

“It’s too early for much feedback as yet but, anecdotally, students have said Prescribe is helpful to them in preparing for the exam, especially if they are sitting it the second time around,” notes Ms Eggleton. “One wrote to say how much more comfortable they felt with prescribing now. They said the module was extremely well laid out and went at a good pace for them.”

**Future plans**
Garnering feedback on the first iteration of Prescribe will be the first step in informing how it evolves and develops – a process made easier by it being entirely online. “There is opportunity for users to rate and give feedback on specific learning sessions, so we will be able to track which are popular, which are rated well and which not so well,” says Professor Maxwell. He adds: “Potentially we might look for a more focused association between the Prescribe project and the Prescribing Safety Assessment, but also at whether – as well as targeting final-year medical students – we could perhaps do more to target medical students in their earlier years of study too. We might also wish
to support the e-learning modules with video-type material in the future."

Alison Eggleton adds that regular revisions will be necessary to keep Prescribe up to date. “Between writing the sections on anticoagulation around September 2016 and then launching [in January], there was already a problem because the product licence for one of the drugs had changed and this made the multiple choice answer incorrect,” she cites. “It can easily become out of date if we are not vigilant about it.”

Prescribe is not the only development helping to produce better prescribers. The British Pharmacological Society is also currently working with e-LfH on an online training Prescribing Simulator tool, which will be available for all NHS doctors to practice their prescribing skills. So far, there is no set launch date but pre-publicity for the simulator promises that it will deliver an opportunity for prescribers to practice in a simulated online environment at any time or place, with prescriptions being automatically scored and feedback given. If it can help reduce error rates and create more confident prescribers, it promises to be another useful tool.

References

Declaration of interests
None to declare.

Angela Dowden is a freelance journalist and registered nutritionist

about/research/25056.asp
Prescribe September 2017
prescriber.co.uk