Medicines use

The Prescribing Safety Assessment

Prescribing is a complex task requiring knowledge of medicines and the diseases they are used to treat, careful judgement of risks and benefits of treatment, and attention to detail. Prescribing can improve health, but also has potential hazards. Studies have found that prescribing is the most challenging area for new graduates, and that errors are common both among trainees and professionals. The Prescribing Safety Assessment (PSA) is an online tool that allows health care professionals to develop and demonstrate their competencies in relation to the safe and effective use of medicines.

The importance of prescribing

Prescribing medicines is the primary tool used by all healthcare systems to treat disease, alleviate symptoms and prevent future illness. Although the majority of prescriptions are appropriate, many studies from around the world have drawn attention to the rates of prescribing errors and avoidable adverse drug reactions. In the United Kingdom (UK), errors are found in around 10% of hospital prescriptions and 5% of general practice prescriptions.\(^1\)\(^-\)\(^4\) These errors matter because they not only harm patients but present unnecessary costs attributable to failed care, prolonged hospital stays and increasing litigation.

Prescribing is a high-stakes activity for all involved. For patients, medicines are a major factor affecting their health. For doctors and hospitals, prescribing represents a degree of clinical risk and significant cost. Prescribers have to select the correct medicine, dose, and route and frequency of administration, sometimes in the face of diagnostic uncertainty, while taking into account predicted individual variability in medicine handling and response as a result of comorbidity, genetics, and interacting medicines. Newly graduated doctors write a large proportion of hospital prescriptions (medication orders), and it is therefore unsurprising that widespread evidence exists to show that prescribing by this group is frequently sub-optimum. But senior doctors also make errors, and concerns regarding prescribing skills among all prescribers have been expressed internationally.\(^5\)

We should not be surprised that errors are made since prescribers work under very high-pressured circumstances, full of distractions. They have a heavy burden of administration and require continuous multi-tasking which results in them being more error-prone. The number, age, and vulnerability of hospital patients have

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This article was contributed by a team from the Prescribing Safety Assessment, which is delivered jointly by the British Pharmacological Society and MSC Assessment. We thank Professor Simon Maxwell and Dr David James for drafting the manuscript.
also progressively increased, as has the complexity of the treatment regimens for common disorders.

In view of this situation it might be expected that new graduates would be well prepared to begin prescribing in these demanding work environments. However, a clear theme from many studies is that students and new graduates often do not feel adequately prepared to carry out their role in prescribing, a concern echoed by their supervisors.

Development of the PSA

Aim and scope

In response to this situation the British Pharmacological Society (BPS) has collaborated with the UK Medical Schools Council to develop the Prescribing Safety Assessment (PSA)\(^6\) an online training and assessment package to promote better prescribing skills in healthcare. The PSA is a valid and reliable assessment that allows final year medical students to demonstrate that they have the necessary knowledge, skills and judgement (in relation to the safe and effective use of medicines) to begin their work as independent junior prescribers in UK hospitals. The PSA aims to bridge the gap between traditional pharmacology education and the practical application of that knowledge to patient care in the clinical environment. It presents learners with realistic clinical cases where they are scored on their performance and receive targeted feedback to improve their future performance.

Structure

The PSA is based on an assessment blueprint of eight sections containing item styles that cover different aspects of the clinical activity undertaken by prescribers (Figure 1). The assessment is “open book” but time-limited, with candidates having access to the British National Formulary throughout its duration. The online nature of the assessment offers the advantage of automated marking of candidate prescriptions and provision of feedback.

![Figure 1: The structure of the Prescribing Safety Assessment](image)
Question items
The PSA question items have been developed over several years by a team of around 100 trained authors (including clinical pharmacologists, other specialty and trainee doctors, general practitioners and pharmacists) who are mainly based in UK medical schools or National Health Service (NHS) hospitals. Their question items are submitted annually and undergo a strict five-stage quality assurance process overseen by the PSA Assessment Board. Items that survive each stage of review, including a national peer-review meeting, are entered into the PSA item bank, which now includes around 3,000 items. The pass marks for each paper are determined by a Standard-Setting Group comprising representatives from UK medical schools who are selected for their knowledge of the appropriate minimum standard expected of Foundation Year 1 doctors.

Delivery and feedback
The PSA is delivered online from a cloud-based server located in Mumbai, India. All candidates (final year medical students) are registered on the PSA online system and sent an e-mail requesting them to activate their accounts. After activation of their accounts they have access to general information about the PSA, information videos and 1-hour, 30-item, practice papers with question-specific feedback. Candidates are encouraged to familiarize themselves with the different question types and the assessment environment and to practise finding information in the online version of the British National Formulary.

The detailed feedback associated with each question item enables the student to identify gaps in knowledge and areas for improvement. This feedback is therefore an essential tool in helping students improve their knowledge and practice in prescribing. Formative feedback means students can take control of their own learning and allows every candidate to assess his or her own work for personal development.

The PSA can be offered formatively or summatively, and has been shown to be suitable as a standardized national prescribing assessment delivered online. It is also delivered to professionals as Continuing Education.

Growth in the PSA
In the UK
The PSA has been a huge success and has now been supported by the UK’s General Medical Council and the Foundation Programme Board to the extent that all new entrants are expected to have passed it in order to continue training as a doctor in the UK, whether they come from UK medical schools or from overseas. Over 50,000 students from the UK and overseas have participated in the training and assessment, and 10,000 medical students sit the PSA each year.

A pilot study has confirmed the feasibility and acceptability of the PSA for pharmacist prescribers and benchmarked their performance against that of final year medical students. For several years the PSA has been delivered to undergraduate and preregistration pharmacists from around 20 pharmacy schools in the UK. Feedback from Health Education England (HEE), students and faculty has been very positive and the number of pharmacy candidates that have taken the PSA has grown to almost 2,000.

Internationally
The BPS has redeveloped the PSA platform and content to internationalize its appeal and
relevance. This new version of the PSA, the *Prescribing Skills Assessment*, is delivered to medical schools in Canada, Australia, New Zealand, Malta, and Ireland and has been piloted in India, with further pilots planned for Europe, China and the Middle East.

The BPS and the Royal College of Physicians and Surgeons of Canada have been undertaking an ambitious collaboration to support safer prescribing by doctors in Canada. Representing a significant commitment by both organizations, the partnership has brought experts together to raise the profile of prescribing competency and to promote its importance through the joint development of education and assessment resources in this field. This *Prescribing Safely Canada (PSC)* initiative is intended to help physicians assess their prescribing skills, identify gaps and help correct unsafe practices and cognitive bias through a feedback loop, while providing analytics of aggregate data that can inform the Royal College of systemic gaps. This initiative is underpinned by the strategic direction of the Royal College, which is to develop a comprehensive agenda for safe prescribing of medications to support specialists that lead and develop high quality, safer care.

There is a mutual benefit for both the Royal College and the BPS to collaborate around medication safety. For the BPS, the Royal College is an attractive partner that is able to utilise the assessment and learning resources formatively as a means of professional development for more experienced clinical staff. The BPS is an equally attractive partner for the Royal College, with a robust technical platform allowing for international collaboration, educationally and psychometrically sound assessment tools, and global expertise on the dissemination of pharmacological knowledge.

**The future**

With the recognition it now enjoys, the PSA represents high standards of quality in medical education and training. The assessment, along with its associated training material, is greatly appreciated by students who recognize the importance of prescribing skills to their future careers. Moreover, the PSA is making a critical contribution to improved patient safety in UK healthcare.

Our future aim is to harness the experience that we have gained from a project that was originally conceived to address a concern in UK healthcare, and to use that knowledge to offer a tool that might enhance the quality of medicines usage globally. We are delighted to be counted as a stakeholder supporting WHO’s Medication Without Harm theme for the third Global Patient Safety Challenge. We intend to develop, and make available, educational case-based materials that will help to embed the prescribing principles outlined in the WHO Guide to Good Prescribing, largely focusing around the Essential Medicines List. To make this a reality, we would like to bring interested stakeholders together as part of an International Advisory Board.

**References**

Prescribing safety assessment (PSA)


