

# New national Prescribing Safety Assessment for medical students

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**Prescribing is a complex area that new graduate doctors find challenging and up to now, assessment of medical students has been variable. However, from 1 August 2016, the new national Prescribing Safety Assessment (PSA) will become mandatory for all UK medical students.**

**P**rescribing is a fundamental part of the work of foundation year 1 doctors, who write and review many prescriptions for NHS patients every day. Mistakes can be costly and in some cases fatal – so it is essential all doctors have the skills and judgement required to get it right.

You may think that this is stating the obvious, but research has found that too many drug errors still occur and it is a complex area that new graduate doctors find the most challenging.

## Prescribing errors

In 2009, a GMC-sponsored study found that a large proportion of hospital prescriptions contain errors.<sup>1</sup> The research checked 124,260 medication orders across 19 hospitals in north-west England. Of these, 11,077 contained errors; an error rate of 8.9 per cent. Of those prescriptions written by foundation year 1 and year 2 doctors, the error rates were 8.4 per cent and 10.3 per cent respectively. However, all grades of doctor, including consultants, made errors. Potentially lethal errors were found in fewer than 2 per cent of erroneous prescriptions and the report stressed that



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very few of the errors caused harm because almost all were intercepted and corrected. The intervention of nurses, senior doctors and, in particular, pharmacists was vital in picking up errors before they had an impact on patients.

## Prescribing Safety Assessment

Many doctors felt this was just not good enough. Professor Simon Maxwell, medical director of the Prescribing Skills Assessment, Clinical Pharmacology Unit, University of Edinburgh, is one of them and he began the campaign to revolutionise the system. From 1 August 2016, his vision will come true when the national Prescribing Safety Assessment (PSA) will become mandatory for all medical students.

Professor Maxwell tells *Prescriber*: “The genesis of this project stretches back to the mid-2000s when anecdotes and evidence started to emerge that there was an unacceptably high level of error in prescribing in NHS hospitals, particularly among the group who wrote most of the prescriptions in the NHS – foundation year 1 and year 2 doctors who were straight out of medical school.

“The causes of that were multifactorial and there were certainly, and remain, a lot of issues about the systems that doctors and other prescribers were using that perhaps militate against the best result. But given that the error rates in that group were running at 7–10 per cent across the UK, this gave concern to everyone and we needed to find a solution.

“The graduates themselves also found this particular part of their work challenging and those supervising them felt this was an area that they worried about most and felt they were the least prepared for,” he adds.

In 2007, the Medical Schools Council convened the Safe Prescribing Working Group with a host of different stakehold-

ers, including the British Pharmacological Society, to tackle the problem.

Professor Maxwell continues: “It is amazing to think that up until that time, there was no clear agreement from all the stakeholders involved in medical education as to what a new medical graduate should be signed off as able to do in relation to the safe and effective use of medicine.”

An agreed list of outcomes on what an undergraduate medical education in prescribing should look like was drawn up and supported by all stakeholders. Professor Maxwell says: “It was also decided that learning materials should be put together to help students in their training as well as some sort of assessment process that would enable medical schools and their graduates to demonstrate that the learning outcomes had been met.

“Having agreed the outcomes, a steering group was formed in 2010, which I chaired, and work began on the now-called Prescribing Safety Assessment. We agreed that this would be an assessment that all final-year med-

ical students needed to pass before they were able to assume NHS responsibilities. We also agreed it would be an open-book assessment so that while doing it, all candidates would have access to the *BNF* and we also made the critical decision that it would have to be completed online.”

Professor Maxwell adds: “This was absolutely the right decision and has given us the potential to deliver the assessment all around the UK and now overseas as well. We know that in the prescribing world, even in hospitals, we are moving towards electronic prescribing. So although we cannot replicate the paper prescribing experience, this will stand us in good stead into the future and enable us to mark enormous numbers of prescriptions quickly and consistently from candidate to candidate.”

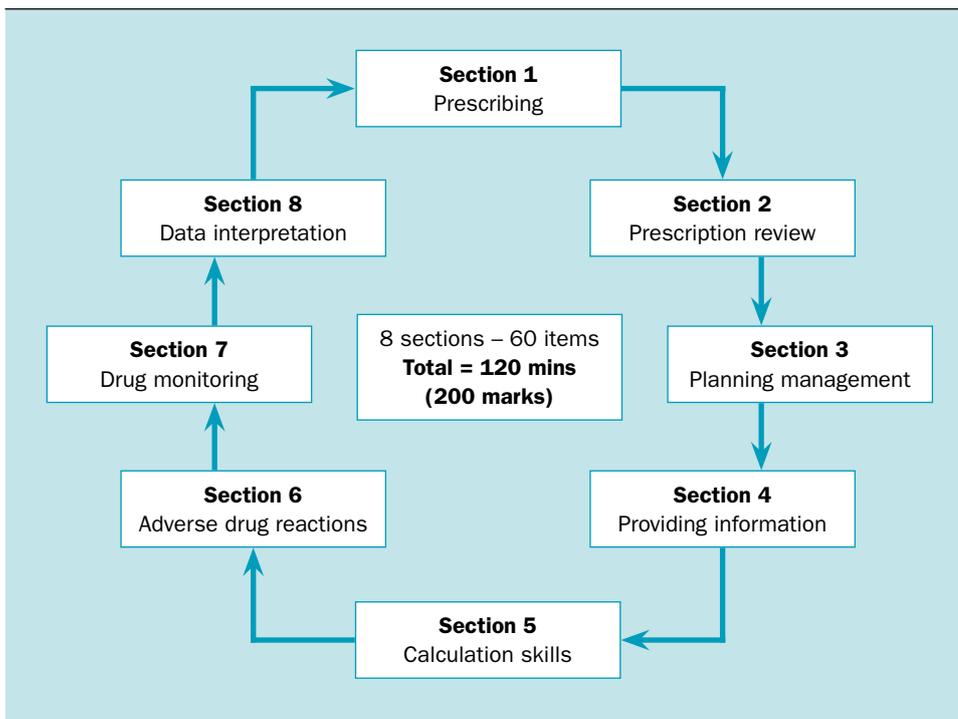
### Assessment structure

Professor Maxwell explains: “We decided that it would be an eight-section assessment – making new prescriptions would count for 40 per cent of the marks [see Figures 1 and 2].<sup>2</sup> We also wanted to reflect the other things trainee doctors do in relation to medicines, so: reviewing the prescribing of others (prescription review); planning management of conditions like asthma more widely; dealing with adverse drug reactions; knowing how to monitor the effect of medicines; communicating with patients and other staff about medicines; knowing how to interpret data in relation to medicines; and, finally, calculation skills.

“Those eight sections have informed the question items in the PSA and we have also used different work domains including medical and surgical environments, elderly care, paediatrics, obstetrics and gynaecology and psychiatry.”

He adds: “It’s a challenging, time-intensive test with 60 items, which runs over two hours. We have had discussions and a student concern is that it is unrealistically time-pressured but the reality is, time is very precious in the NHS.

“We have a very extensive quality assessment process to make sure the PSA allows candidates to properly demonstrate their competencies in relation to the safe and effective use of medicines.



**Figure 1.** The eight sections of the Prescribing Safety Assessment (PSA), each of which may be set in seven different domains of clinical activity: medicine, surgery, elderly care, paediatrics, psychiatry, obstetrics and gynaecology, and general practice<sup>2</sup>

Prescribing Item

ID PWS101

This question item is worth 10 marks

You may use the BNF at any time

**Case presentation**  
 A 74-year-old man presents to the medical assessment unit complaining of shortness of breath at rest and swollen legs. These symptoms have been gradually increasing over the last 2 weeks. He has been having difficulty sleeping and sat up in a chair all of last night, calling his doctor this morning. **PMH.** He has ischaemic heart disease and hypertension, both of which are normally well controlled. **DH.** He normally takes ramipril 10 mg daily, isosorbide mononitrate 60 mg daily, simvastatin 40 mg nightly, aspirin 75 mg daily. An intravenous infusion of glyceryl trinitrate has just been started.

**On examination**  
 HR 105/min and regular, BP 110/70 mmHg, JVP elevated at 6 cm, HS third heart sound, RR 30/min, O<sub>2</sub> sat 93% on air. Examination of the chest reveals dullness to percussion both bases and fine inspiratory crackles both lower and mid zones. Bilateral swollen legs with pitting oedema to knees.

**Investigations**  
 Na<sup>+</sup> 141 mmol/L (137-144), K<sup>+</sup> 4.2 mmol/L (3.5-4.9), U 7.0 mmol/L (2.5-7.0), Cr 120 µmol/L (60-110). ECG shows sinus tachycardia. The CXR is illustrated (right).

**Prescribing request**  
 Write a prescription for ONE drug that will help to relieve his fluid overload and breathlessness.  
 (use the hospital 'once-only medicines' prescription chart provided)

**ONCE ONLY MEDICINES**

Date	Time	Medicine (approved name)	Dose	Route	Prescriber (sig + print)	Use	TS

1 / 5

**Figure 2.** Sample prescribing question from the Prescribing Safety Assessment (PSA)

The PSA online system is also where medical students go to practise prescribing and get all the information they need and I am especially proud of that.

“This assessment is not a ‘final hurdle’ for students to jump or trip over, it is very much an environment where medical students can go and practise prescribing and their use of medicines without the danger of harming any patients – and that’s one of the most highly rated areas of the project by the medical students.

“It’s common internationally to have national assessments given by a central body, such as a government department or regulator. The PSA is unusual in that it is both national and collaborative, being developed by assessment experts from all of the medical schools coming together and working through a rigorous question review process.

“This means it can bring to bear a significant level of expertise while preserving the autonomy of the institutions involved – through their input in the assessment’s content and development.”

### A much-needed test

Dr Simon Schachter, senior clinical tutor at Imperial College School of Medicine, London, says: “The assessment is designed to eliminate problems across the range of prescribing. It tests correct prescribing choices, potential side-

effects, calculation and providing information to patients, among other areas. Mostly it is a multiple choice-type exam, but for some questions, the students need to write a prescription.

“As far as I know, there is no plan for a similar national exam for nurses, but many are now trained prescribers who will be tested in these skills by their universities or schools before they are allowed to prescribe.”

Dr Schachter agrees that a national prescribing assessment is much needed. “Going back to the 1990s, there was surprisingly little emphasis on prescribing skills, although there have been pilots of this exam for several years and some medical schools, including Imperial College, had devised their own tests that were essential for qualifying.”

All medical schools have compulsory examinations for finals, but the UK is unusual in that universities have a high degree of autonomy, so the medical schools each set their own assessments. The PSA is an exception and is taken nationally.

Dr Schachter continues: “Now everyone realises that this has to be the way forward and it is so crucial to safe practice that it cannot be left to individual medical schools to handle. The test is not a panacea; errors will still occur, but the hope is that they will definitely decline.”

He says the success of the PSA would be gauged over time. “This will be a slow process, but will include follow-up research on future errors and surveys of how ready newly qualified doctors feel to prescribe. There will be no significant cost to the medical schools or, of course, to individual students. And it is very likely that the PSA will result in money savings in the long run. Prescribing errors are costly for the NHS and, more importantly, can cause significant harm to patients,” Dr Schachter adds.

Mrs Shagaf Bakour, director of medical education at Aston University Medical School, Birmingham, says: “This is an excellent standard that will enhance patient safety by reducing potential prescribing errors. Medical students already feel more confident in prescribing with the adoption of the GMC’s document *Promoting Excellence*<sup>3</sup> and extending the assistantship training of students from a standard six weeks shadowing qualified doctors/consultants to an 18-week assistantship placement.

“This test will address a medical student’s hesitation and equip our graduates to have the confidence to prescribe, giving them the correct knowledge and accreditation for effective prescribing.”

Mrs Bakour adds: “As it is a GMC requirement, it is not up to the students to evaluate or opt out; however, I believe it will be comforting to medical students to have done it and I am sure it will give the majority of them a sense of satisfaction.”

### Practical experience

Somerset GP and community hospital doctor Clare Nettleton qualified from St Mary’s Hospital Medical School, London, in 1992.

She says: “This is an excellent idea and it should have been mandatory years ago – we just need to ensure that the assessment is fit for purpose. Only those who had been fortunate to shadow a house officer during their final year had even a modicum of an idea what prescribing was all about when I qualified. Back in the day, we were awash with theory but had almost no useful practical experience.

“The nurses had to teach us how to write up a drug chart and prescribe the basics like bags of fluid. I didn’t move

without my BNF. The assessment would have only helped me if I had had a useful grounding in practical prescribing by the time of qualification. It was far more about learning on the job, which wasn't always safe, to say the very least.

"There was a universal turmoil of bravado and terror when we first went on the wards. The nursing staff were under no illusion as to our practical inexperience; our course then being so theoretical compared to theirs, which was so much more practical and tailored to the job. Of course, medical teaching now is far more about problem-based learning.

"Fortunately, as long as you applied yourself, it was possible to gain experience at an exponentially rapid rate – but this was not without risk to the patients. There were undoubtedly numerous drug and prescribing errors made then by newly qualified junior doctors."

Dr Nettleton adds: "Litigation was not nearly as rife then as it is now and I suspect errors were seen as part of the learning curve. Of course, that is completely unacceptable and confidence in one's own competence as a prescribing practitioner should be an absolute given when hitting the wards as a newly qualified doctor. Passing a thorough prescribing assessment should absolutely be a mandatory part of a medical student's qualification."

Professor Maxwell agrees that medical 'accidents' and 'mistakes' are much more in the spotlight in our current litigious climate, with doctors spending more time answering complaint letters and doctors in all areas finding themselves prescribing more defensively.

"No variation is acceptable and I would like to think that the general pub-

lic will gain some reassurance from this national assessment process, which will hopefully ensure this crucial area of doctors' work will be of a consistently high, national standard and will continuously improve."

### The future

A total of 36,000 medical students are now registered on the PSA system and over a million prescriptions have been marked. The PSA project has received funding from the Department of Health, Health Education England and NHS Education for Scotland to support the development and piloting of the assessment. It is currently funded by contributions from Medical Schools Council (MSC) Assessment and the British Pharmacological Society.

However, one of the challenges the PSA project faces going forward is finding a more stable funding revenue in the future. Professor Maxwell notes: "The UK spends around £15 billion to £20 billion a year on prescribing medicines and the PSA project, which stimulates the competency of those who prescribe, costs approximately £200,000 per annum. It's good value!

"I would now call on the funding bodies of the Department of Health to look at how and what has been achieved on a relatively small budget and support the development of the PSA in the future, which I believe showcases British medical education at its best."

Susan Goldsmith, deputy chief executive of the GMC, says: "Prescribing is a fundamental part of the work of newly qualified doctors, who write and review many prescriptions each day, and we expect them to be able to prescribe safely and effectively.

"We know, through our own research and the work of others, that prescribing is an area that new graduates often find challenging – it is a complex and difficult skill, requiring knowledge of medicines and the diseases they are used to treat, careful judgement, and attention to detail. We welcome any measures that will better prepare doctors to prescribe medicines safely."

### Further information

Prescribing Safety Assessment website: <https://prescribersafetyassessment.ac.uk>

### References

1. Dornan T, et al. An in depth investigation into causes of prescribing errors by foundation trainees in relation to their medical education. EQUIP study. Final report to the General Medical Council. 3 December 2009. [http://www.gmc-uk.org/FINAL\\_Report\\_prevalence\\_and\\_causes\\_of\\_prescribing\\_errors.pdf\\_28935150.pdf](http://www.gmc-uk.org/FINAL_Report_prevalence_and_causes_of_prescribing_errors.pdf_28935150.pdf)
2. British Pharmacological Society, MSC Assessment. Prescribing Safety Assessment: assessment blueprint. 10 December 2015. <https://prescribersafetyassessment.ac.uk/resource/PSA-Blueprint-December2015/pdf>
3. GMC. *Promoting excellence: standards for medical education and training*. 15 July 2015. <http://www.gmc-uk.org/education/standards.asp>

### Further reading

GMC. *The state of medical education and practice in the UK report: 2014*. <http://www.gmc-uk.org/publications/25452.asp>

### Declaration of interests

None declared.

Kate Stewart is a freelance health journalist