msc ASSESSMENT

Prescribing Safety Assessment

BRITISH PHARMACOLOGICAL SOCIETY

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Independent review into the Prescribing Safety Assessment

CHAIRED BY PROFESSOR DAME JANE DACRE

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Forewords

Dame June Raine
Chief Executive, MHRA

Medicines today are more complex and powerful than ever before, bringing the promise of benefit in conditions which until now have been lacking in therapeutic options. With an ageing population and multimorbidity, polypharmacy has become the norm rather than the exception.

A medicine is given regulatory approval at the point at which the evidence of its effectiveness is considered to outweigh its risks. This judgement is a provisional one - the real learning about a medicine's benefits and harms comes once it enters clinical practice. For innovative or transformative medicines which have been awarded early patient access, the knowledge gap can be very wide indeed.

Being a safe prescriber therefore depends on three things. First and foremost, it requires detailed familiarity with the package of information that has underpinned the medicine's approval – the conditions such as indication and dose, any precautions or warnings, and any monitoring requirements, under which its benefits can be considered to outweigh the likelihood of harm.

Second, it means actively keeping up to date as the knowledge of a medicine's benefits and harms evolves in clinical use and embracing this as a key component of continuing professional education.

And third, perhaps most important of all, it means contributing to that growing knowledge by reporting via Yellow Card to the Medicines and Healthcare products Regulatory Agency any suspicion that an adverse reaction may be related to a medicine's use.

Safe prescribing is a vital competence and a professional duty of all who use medicines. I therefore welcome the recommendations of this timely report.

James Titcombe OBE
Patient Safety Advocate

More than 237 million medication errors are made every year in England, costing the NHS upwards of £98 million and an estimated 1,700 lives year. Errors in prescribing are thought to contribute to over one fifth of these cases[1], indicating the importance of ensuring prescribers are confident and competent to carry out their work safely and fully supported.

This timely review of the Prescribing Safety Assessment (PSA) has involved engagement with a wide range of stakeholders, and has carefully reviewed the available evidence to make clear and considered recommendations for the future of the PSA. These include maintaining mandatory prescribing assessment, standardising and publishing examination regulations, regulatory oversight from the GMC and ensuring that the PSA is taken prior to entry to clinical practice.

As the review notes, safe prescribing is a fundamental goal of national health care and the guidance and recommendations made here are intended to ensure patient safety is maintained and embedded into this key area of clinical practice, ultimately in the hope of helping to reduce costs associated with medical error and more importantly, save lives.

Professor
Dame Jane Dacre
Review Chair

I am pleased to present the report from the independent review into the Prescribing Safety Assessment (PSA). The work was commissioned by the British Pharmacological Society and Medical Schools Council to provide strategic guidance for the future of the PSA and provides a set of pragmatic recommendations for consideration. We have reviewed evidence from a range of sources to represent a consensus view which will embed prescribing safety into the competencies required of new medical registrants, and potential other groups of new prescribers.

The healthcare landscape is increasingly complex, and in a state of continuous change. It is imperative that patient safety remains at the heart of clinical practice within this difficult environment.

I am hugely grateful for the support I have received from the secretariat which has enabled us to collect and analyse a very large and varied body of evidence from a wide range of stakeholders over a six-month period. It has been a pleasure to work with Emma, Sam and Sophia who have been flexible, conscientious, and wonderful company throughout.

I would also like to thank members of the Oversight Group for their wise advice and active participation in the work.

Some of the recommendations will require further detailed discussion, and a generous timeframe for implementation, but overall, they are sensible, pragmatic, and in the best interest of patients and prescribers.

Executive summary

This independent review into the Prescribing Safety Assessment (PSA) was commissioned by the Medical Schools Council (MSC) together with the British Pharmacological Society (BPS) in the summer of 2022. It suggests a strategic future direction for the PSA and addresses how the PSA has impacted prescribing assessment and practice for medical students and Foundation Year 1 (FY1) doctors. This review is intended to support national decision making about the future of UK prescribing assessment in the context of the imminent introduction of the Medical Licensing Assessment (MLA).

A review group was convened, including an Oversight Group and a secretariat, and worked over a period of approximately six months to create a set of recommendations for further consideration.

The review team used a mixture of methods, including qualitative and quantitative approaches, to gather data about the PSA. This included a review of available literature and an online survey, which had over 700 responses from a mixture of organisations and individuals, including students.

We also held two round table events, several meetings with stakeholders and six meetings with an Oversight Group of experts with representation from all four UK nations. Recommendations were extrapolated from consistent themes across stakeholder groups.

The findings showed strong support for the assessment of prescribing safety, alongside some discussion about the most appropriate method of assessment to use. Most respondents to our online survey wanted to keep the PSA,

but a minority wanted the assessment to be discontinued and replaced by some form of workplace-based assessment (WPBA).

There is consensus that there should be appropriate and dedicated assessment of prescribing competence and that assessment should be mandatory and either an exit requirement from undergraduate (UG) medicine, or an entry requirement to FY1. There was also strong support for the test to be taken by international medical graduates (IMGs) who enter UK medical practice in both FY1 and FY2.

Concerns were expressed about the lack of a clear set of published examination regulations for the PSA, and the lack of formal governance.

There was support for exploring the feasibility of bringing the PSA under the umbrella of the national MLA, whilst preserving the increased range of question styles inherent in the PSA, possibly as a third written paper. This reflects the recommendation expressed in the McLachlan review of 2019[2], which argues for the retention of a standalone PSA and is aligned with the perspective shared by the majority of stakeholders.

If this approach were adopted, the PSA would become a component of medical school summative assessments, which are included in the regulatory oversight framework for basic medical education by the General Medical Council (GMC). A similar addition of the PSA to the Professional and Linguistic Assessments Board (PLAB) test would be desirable. A possible name to describe the inclusion of the PSA under the umbrella of national licensing assessments would be the Medical and Prescribing Licensing Assessment, or MPLA. There would need to be adequate time for consideration and implementation, with careful review of the blueprints and minimisation of any overlap between the two assessments.

The PSA as a stand-alone or combined test of prescribing needs to become financially secure. An MPLA would provide a more robust financial model. Funding should not come directly from students, apart from IMGs, where payment arrangements should remain similar to those existing for the PLAB test.

There is potential for the PSA test to be made more easily available to other professional prescribers, and to international communities. This requires further exploration due to the complex regulatory landscape for other professional groups.

Recommendations have been discussed with stakeholders, and subsequently made for consideration by the MSC and BPS. If accepted, a partnership board would be needed with representation from the four UK nations, BPS and MSC assessment experts and relevant regulators. There is a need to ensure collaboration, an appropriate implementation plan and governance with a pragmatic timeline and regulatory oversight for an MPLA assessment.

1. Recommendations

Recommendation 1

Appropriate and mandatory assessment of prescribing should remain as a condition of practice for doctors in the UK: *evidence of prescribing competence is highly desirable for new UK doctors, and those entering the UK from overseas.*

The evidence shows that the PSA is a robust and well validated stand-alone test, with good overall reliability (see Appendix 9.4). There is evidence of reduced variability in performance from different medical schools over time, suggesting that the PSA has standardised prescribing preparation for UK graduates. However, there were insufficient data available to conclusively link the PSA with a measurable impact on prescribing. There were no prospectively collected data and the data sources that are available are incomplete and single nation.

There is evidence as described in the McLachlan review that the landscape of undergraduate education has changed and has a greater focus on prescribing safety[2]. However, as above, most stakeholders wanted the PSA to remain in some form. The majority opinion of stakeholders and experts was that the MLA would not be able to replace the PSA due to breadth of proposed MLA coverage and the proposed single best answer (SBA) question format. It was frequently emphasised that there is a wealth of data from a decade of experience with the PSA but that the MLA has not yet been implemented and thus any possible overlap in content remains unclear at present.

Recommendation 2

The addition of the PSA to the MLA should be considered as a pragmatic suggestion to form a Medical and Prescribing Licensing Assessment (MPLA): *this could comprise an additional and separate paper under the umbrella of the MLA.*

The suggestion that the PSA form a part of an extended MLA (the MPLA), required for practice in the UK by all medical doctors, was consistent across consultation with stakeholders. Scoping work is necessary to establish whether this pragmatic suggestion is feasible. Mapping of the content of the PSA and MLA (blueprinting) would be required to ensure appropriate coverage of relevant topics and examination format, as would careful consideration of mark schemes and compensation rules. It would be advisable for medical schools to consider also having a prescribing competency component in the Clinical and Professional Skills Assessment (CPSA) test of the MLA.

Recommendation 3

The examination regulations need standardising and publishing: *both the PSA and the MLA, when launched (or the MPLA) should publish examination regulations. This will standardise examination delivery between administering institutions and clarify the management of irregularities or appeals. The governance of the PSA should be reviewed to ensure that any examination irregularities are identified and addressed prior to confirming results to candidates.*

The regulations for the PSA as a stand-alone assessment, administered by various institutions, are unclear. PSA sittings administered by universities currently fall under regulations by those individual institutions, and these are not standardised. This has resulted in unclear allocation of responsibility for dealing with allegations of examination irregularities.

Recommendation 4

The PSA or combined MPLA should be considered as a requirement for medical practice in the UK: *this could be a summative assessment as an exit from medical school or an entry requirement for FY1, and should be required for international medical graduates licensing (IMGs) via the PLAB route for entry at FY1 and FY2.*

There is an inconsistent approach towards the PSA between medical schools. This has led to variation in whether the PSA is a summative or formative assessment, and when the assessment is taken. There is a group of IMGs who enter the workforce at FY2 or higher-level posts and are immediately able to prescribe, without taking a prescribing safety test. There was concern from both test takers and assessors, as well as key stakeholder groups, that this leads to unacceptable variability in preparation to prescribe. It also creates an unequal burden of responsibility in prescribing between team members. IMGs are in a more vulnerable position owing to lack of opportunity to take a prescribing safety assessment.

Recommendation 5

The GMC should have regulatory oversight: *the PSA (or MPLA) should be a national requirement for medical practice. As such, it should be subject to regulatory oversight from the GMC.*

There is currently no regulatory oversight of the PSA from the GMC. All national summative assessments in medicine have a requirement for regulatory oversight, so the PSA (or MPLA) should be no different. Stakeholder input from the survey, round table groups and a discussion forum with post-graduate deans highlighted this governance gap.

Recommendation 6

If implemented, the proposed MPLA should be funded in the same way as the MLA: *the MPLA should be funded in the same way as the MLA will be funded (by universities). In the case of IMGs, funding would follow the model of the PLAB test (self-funded).*

The start-up funding for the PSA is finite and will finish in 2024. If the recommendations in this review are accepted, there is a need for a new and sustainable funding model. Respondents to our survey and round table discussions were clear that this should not be a direct cost to UK students and that the funding model of the MLA should be extended to include the costs of the PSA. The position of IMGs is more complex, and a pragmatic solution is to follow the self-funding model of the PLAB test (or equivalent). There is, however, concern about increasing the financial burden on IMGs and an agreed need for inclusivity.

2. Introduction and background

Purpose of the review

This independent review of the PSA was commissioned jointly by the BPS and the MSC in the summer of 2022. Its purpose is to address how the PSA has impacted on prescribing education, assessment and practice for medical students and FY1 doctors. It was also tasked with considering any overlap between the PSA and MLA and how the two assessments compare in terms of ability to assess prescribing medicines safely, as defined by the GMC.

The review seeks to support national decision making about the future of UK prescribing assessment in the context of the imminent introduction of the MLA. It includes stakeholder views on the potential continued use of the PSA, and whether the PSA has a role alongside the MLA or if it becomes an extension of the MLA. It seeks to elucidate future funding and governance models, as well as timing for the assessment within professional training, and the potential to increase the scope of the assessment to non-medical prescribers.

The PSA is currently delivered through an equal partnership between the BPS and the MSC. The GMC is the medical regulatory body and is responsible for improving medical education and practice across the UK. As part of this role the GMC will be introducing the MLA, which will test the core knowledge, skills, and behaviours of doctors new to medical practice in the UK. To join the medical register, all medical students graduating from UK universities from the academic year 2024-2025 onwards will be required to pass the MLA as part of their medical degree. International doctors who wish to practice medicine in the UK and who currently take the PLAB will be required to sit the MLA from 2024.

(The Terms of Reference of the review are available in Appendix 9.1.)

The Prescribing Safety Assessment

The PSA is a 60-question exam required as part of UK medical training to progress from FY1 to FY2[3].

Figure 1 – Basic structure of the PSA

The PSA assesses the skills, judgement and knowledge required to prescribe and supervise the use of medicines in the NHS. The items each present case-based scenarios in eight item styles (Figure 1)[4].

It was formed by the BPS and the MSC with the support of the GMC as a joint endeavour to improve prescribing safety of junior doctors as they transition from medical school to foundation training jobs. The impetus for the exam's creation was a 2009 report (the EQUIP study) which showed that 8.9% of hospital prescriptions contained errors, with FY1 error rates of 8.4% and FY2 error rates of 10.3%[5]. The PROTECT study agreed in finding that FY1 and FY2 doctors made the most prescribing errors (FY2 more than FY1). The authors found that while contributing factors are complex, foundation doctors are key to improve prescribing error rates because they undertake the majority of prescribing[6]. Reassuringly in these studies, as in a review of prescribing errors in general practice, severe errors were unusual[7]. Errors are more likely to occur at the time of admission[5].

In 2019, an independent review commissioned by the MSC and BPS concluded that the PSA allowed participants to demonstrate safe and effective prescribing practices and was of "a high standard, and comparable with other national level tests"[2]. There was also evidence based on analysis of PSA performance that there was significant variability in prescribing preparation between different universities[8].

However, there is a paucity of published evidence to assess outcomes in terms of change in prescribing errors for those doctors who have taken the PSA in comparison to those that have not. This is perhaps because such an analysis would be complicated by other factors like changes in the NHS before and after the PSA, and difficulty distinguishing those who had taken the PSA from those who had not. Since the implementation of the PSA, UKMED, (a data warehouse of examination results used for research) has had requests for data to analyse various aspects of the PSA, but the studies were not completed. There are also several potential studies listed on the PSA website, most of which have not been initiated.

An evolving landscape

The PSA was piloted in 2012 and 2013 and implemented more broadly in the following years. From August 2016, passing the PSA was included in the FY1 curriculum requirements. Much has changed in the prescribing and clinical workforce landscape in the time since the PSA was developed. Electronic prescribing has become more common-place, pharmacists and mid-level practitioners (including physician associates and nurse practitioners) form an increasing percentage of the prescribing workforce, and IMGs have increased by 121% since 2017[9]. IMGs most commonly enter the UK workforce at more senior levels than the foundation programme, with the majority in non-training grade roles. In keeping with the greater number of IMGs joining the register, locally employed and specialty and associate specialist doctors have risen by 40% over the last 5 years[9]. A significant number of these new entrants to the medical register do not take a prescribing safety test.

The Medical Licensing Assessment

The MLA is a national level medical assessment set to be introduced in 2024. It will be a two-part assessment comprised of an applied knowledge test (AKT) and a CPSA, and will test the core knowledge, skills and behaviours needed to practise safely in the UK[10]. The MLA will include 200 multiple choice questions with a single best answer, as part of the AKT. While safe and effective therapeutic use is recognised as a competency within the MLA framework, it is only one of many skills and specialty-based competencies that will need to be assessed. The MLA will be a requirement for UK and international medical graduates, replacing medical school finals in the UK and the PLAB for IMGs.

Universities in the UK will pay a fee on behalf of the UK medical students. IMGs will self-fund (as in the current model of the PLAB assessment).

Linked with the question of funding models is that of regulatory responsibility; the GMC will be responsible for regulatory oversight of the MLA.

Background to prescribing safety

The safe and effective prescribing of medication is a key crosscutting competency for health care practitioners. Most clinical pathways involve medicines. They represent the highest area of spend (after workforce) across the NHS (England, Scotland, and Wales), estimated at £20.9 billion per year and growing more than the current annual increase in funding[11,12]. We assume this is also likely to be the case for the health system in Northern Ireland. Reducing inappropriate prescribing and ensuring the best outcomes and value from prescriptions is a strategic priority for the NHS[12]. Recognition of adverse drug reactions is key to stopping prescribing cascades, as well as preventing adverse drug reactions (ADRs). Prior research has shown that prescribing errors are common and that clinicians feel poorly prepared by university education to prescribe[13]. Data collected from the PSA candidate survey shows that 39% had written 0-5 prescriptions on a prescription chart during training (see Table 1).

Table 1 - PSA candidate survey responses 2022

Number of prescriptions reported to have been written on a prescription chart during training

No. of prescriptions written	Number	Percentage
0-5	3,790	39.1%
6-10	2,069	21.4%
11-20	1,733	17.9%
21-50	1,348	13.9%
More than 50	742	7.7%

(Data supplied by PSA delivery team – see Appendix 9.4)

Published research, the GMC trainee survey (Figure 2 and Figure 3), and our own stakeholder consultation survey data suggest that UK medical students perceive the PSA to improve their practical prescribing skills and that confidence in prescribing preparedness among foundation trainees has improved steadily since the PSA was introduced, in contrast with other domains[13].

Figure 2 - National Trainee Survey 2015-2021

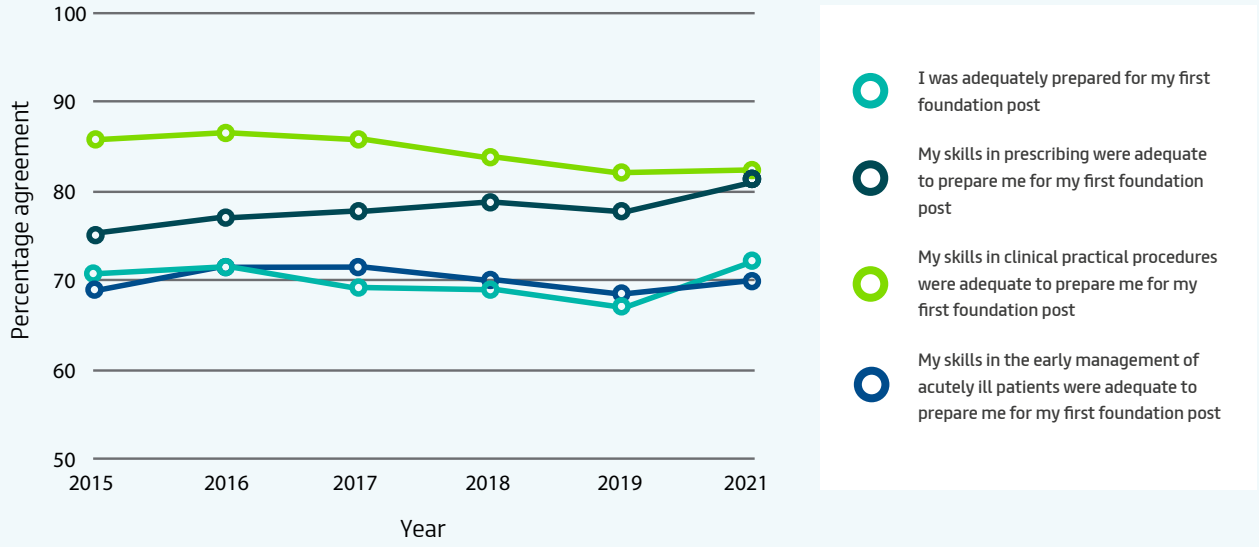
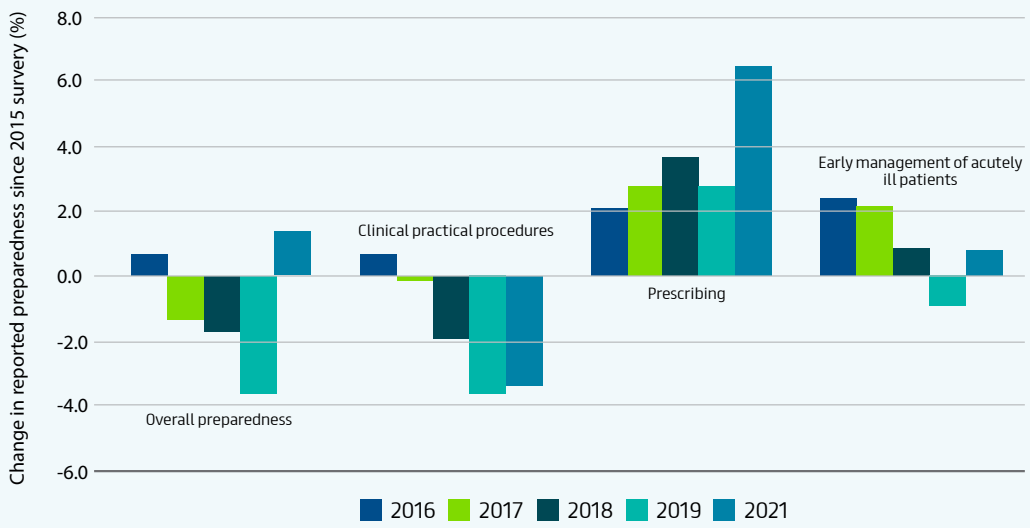


Figure 3 – Foundation doctors' preparedness to prescribe (2015 – 2021) (GMC 2022)



Change in proportion of foundation doctors who felt adequately prepared for each task (2015-2021) Source: GMC National Training Survey 2022

(GMC data in Figure 2 and Figure 3 were supplied by the PSA delivery team – see Appendix 9.4.)

Over 1.1 billion prescription items are dispensed in the community every year and although medicines have many proven benefits, they can also cause harm[14]. As the population ages, people increasingly have multiple co-existing chronic diseases (multimorbidity), necessitating the use of multiple medicines (polypharmacy). For example, 3.8 million people in England alone take eight or more medicines[15]. An ageing population means that complexity of care and medicines optimisation pose

a major challenge for the NHS. Waste in unused medication has economic implications but also an environmental impact. A recent report estimates that medicines represent a quarter of the NHS carbon footprint[15].

Approximately 90% of drugs only work in 30-50% of patients, 6.5% of all hospital admissions are caused by ADRs, and 237 million medication errors are made in the NHS in England each year[16,17]. Errors are more likely in older people, people with multiple morbidities and those exposed to polypharmacy[17]. Nearly two-thirds of medicine-related hospital admissions are preventable and decreasing ADRs and prescribing errors by investing in clinical pharmacologists is estimated to save £6 for every £1 spent[18,19]. Electronic prescribing is now more common and although it reduces some types of prescribing errors and adverse drug events, the ways in which it may contribute to others remains unclear[20]. Pharmacogenomic (PGx) panel approaches are being evaluated in the next few years as part of the genomic medicine strategy in the NHS, and national implementation of PGx in the future would certainly require a place in prescribing assessment[21,22].

In conclusion, the prescribing landscape is changing, and prescribing competence is an essential component of patient safety. This review is tasked with evaluating the role of the PSA in the assessment of medical and other prescribing professionals and supporting the four UK nations in making decisions about the most appropriate way to ensure that tomorrow's prescribers are as well-equipped as possible to prescribe in a safe and effective way.

3. Approach to the review and methodology

The review focused on addressing the issues raised in the Terms of Reference, provided by the BPS and MSC.

It has gathered evidence from several sources and stakeholder groups. These included a background evaluation of the literature, an online call for evidence, online round table stakeholder events and meetings with key stakeholder groups. These sources are listed in appendices 9.3 to 9.6.

Core Team

The review was led by Professor Dame Jane Dacre, who was assisted by a secretariat and two qualitative researchers. The Core Team met weekly to discuss progress, develop the various forms of evidence-gathering and analysis, and to write and compile the report.

Oversight Group

An Oversight Group was established, including individuals spanning the medical and prescribing education spectrum nationally. The panel consisted of 14 individuals with representation across the sector; they came from a wide range of institutions and organisations. The initial Oversight Group membership was suggested by the BPS and MSC and has membership from all four UK nations.

The Oversight Group met six times and provided expertise, discussed the emerging evidence, reviewed and amended the report, and determined the recommendations. Each meeting was held on Microsoft Teams and was recorded for transcription purposes.

Stakeholder consultation survey

To ensure widespread engagement with the review, an open stakeholder survey was hosted online through SurveyMonkey, which ran from November 2022 to January 2023. It was advertised and promoted on social media and disseminated through the Oversight Group and stakeholder organisations.

There were over 700 responses to the consultation, from a mix of organisations and individuals. The majority of respondents were individuals (89%), who were mostly medical students, members of staff at schools of medicine or pharmacy, or foundation doctors. Seventy-six respondents, equating to 11%, responded on behalf of organisations, such as medical schools, NHS trusts, and organisations representing medical education across regions and nations. There is further information on the breakdown of respondents to the consultation in Appendix 9.5.

The responses, which included both binary and written answers, provided high-level qualitative and quantitative data, from a mix of individuals and organisations. The stakeholder consultation narrative responses were analysed to identify key findings and themes using qualitative research methods.

Almost all questions (other than asking if respondents were answering as an individual or organisation) were not compulsory, and so could be skipped if respondents did not feel able to answer based on the information that they had. Further information on the stakeholder survey is available in Appendix 9.5.

Round table meetings

In February 2023, the review team held two virtual round table meetings on Microsoft Teams, one on 15 February and the other on the 22 February. Each round table had breakout rooms with two facilitators per room, who used a semi-structured list of questions (see Appendix 9.6) as prompts for discussion. Each round table and breakout group meeting was recorded and transcribed using the Microsoft Teams internal system. These data were analysed qualitatively and formed part of the evidence used in the report. The first round table was comprised of junior doctors who had recently sat the PSA and a patient representative, while the second round table was focused on educators.

Limitations

There are potential limitations to the work carried out for this project. The call for evidence was open for seven weeks, over the Christmas period. The time span was extended to mid-January to mitigate for this, and every effort was made to maximise the survey responses. The largest group of respondents identified themselves as medical students, with fewer organisational responses, so these were analysed separately before inclusion to ensure themes were accurately represented. Our timescales did not allow for a full coding and framework analysis; however, the full dataset can be made available for further analysis on request. Round table responses were reviewed and incorporated into the relevant datasets for analysis. Additional quantitative data was publicly available or provided by stakeholders.

It is important to note that we have taken a predominantly qualitative approach to the survey and round table responses and recognise that we were not working with a statistically representative sample. As there was a great deal of consensus in the responses, we do not believe these necessary limitations had a material influence on the findings.

Figure 4 - Channels of inquiry

Review report

A report based on the empirical evidence gathered was produced by the Review Chair, secretariat, and the qualitative researchers, with review from the Oversight Group. Emerging findings were presented to the commissioning organisations and the GMC in March 2023.

4. Summary of key themes

Vast majority of respondents were supportive of the PSA

No radical differences of view between test takers and educators

No radical differences across different UK nations

Round table and meeting themes concur with call for evidence findings

Table 2, below, illustrates recurring responses from stakeholders.

Learning from the PSA	Timing	Governance	Regulation	Finance
Assessment of prescribing is necessary	Should be standardised	Regulatory oversight should be from the GMC	Currently no clear regulatory framework	Students should not pay
Current PSA test is well respected across the sector	Majority suggest before entry to FY1	Relationship with test developers/deliverers should be clear	Regulations should be standardised	IMGs and other professions could pay
Other forms of assessment exist as WPBA	IMGs should take the test prior to entry to practice	EDI considerations are important	No clarity on test irregularity rules	Could be income generating to ensure sustainability
Addition of the PSA to the MLA	Current timing in the calendar year causes difficulties for IMGs	GMC input should be at arm's length	Test has inadequate examination regulations and no or limited governance	Funding should mirror MLA and PLAB
Prescribing is safer now	Should consider support for failing candidates and opportunities to resit	Other professions would require separate regulatory oversight from their relevant professional body	Needs strengthening	Employers or MSC should fund UK graduates

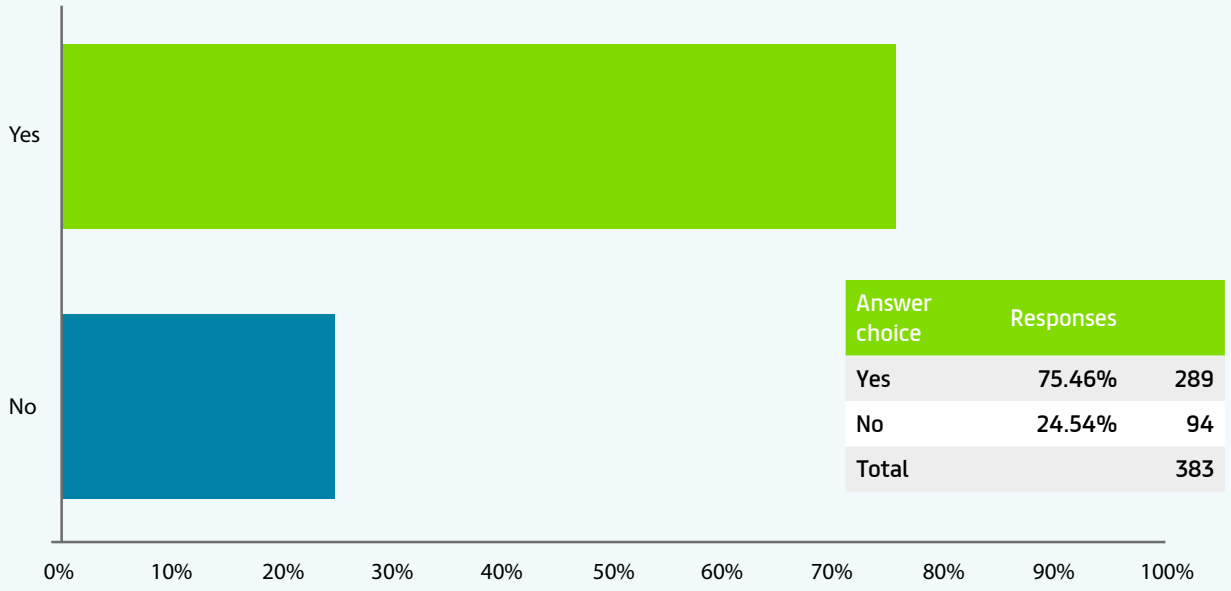
5. Detailed findings of the review

The following sections provide a distillation of the themes identified in the review, collated from the background literature, responses to the call for evidence, and round table discussions. The survey contained both free text comments and binary questions.

5.1. The prescribing landscape

Changes to prescribing since the inception of the PSA

Figure 5 - Stakeholder consultation question: in your experience, has the prescribing landscape changed since the introduction of the PSA in 2014?



Answer choice	Responses	
Yes	75.46%	289
No	24.54%	94
Total		383

Evidence from stakeholders and publicly available data identified key themes in a shifting prescribing landscape. These are outlined below.

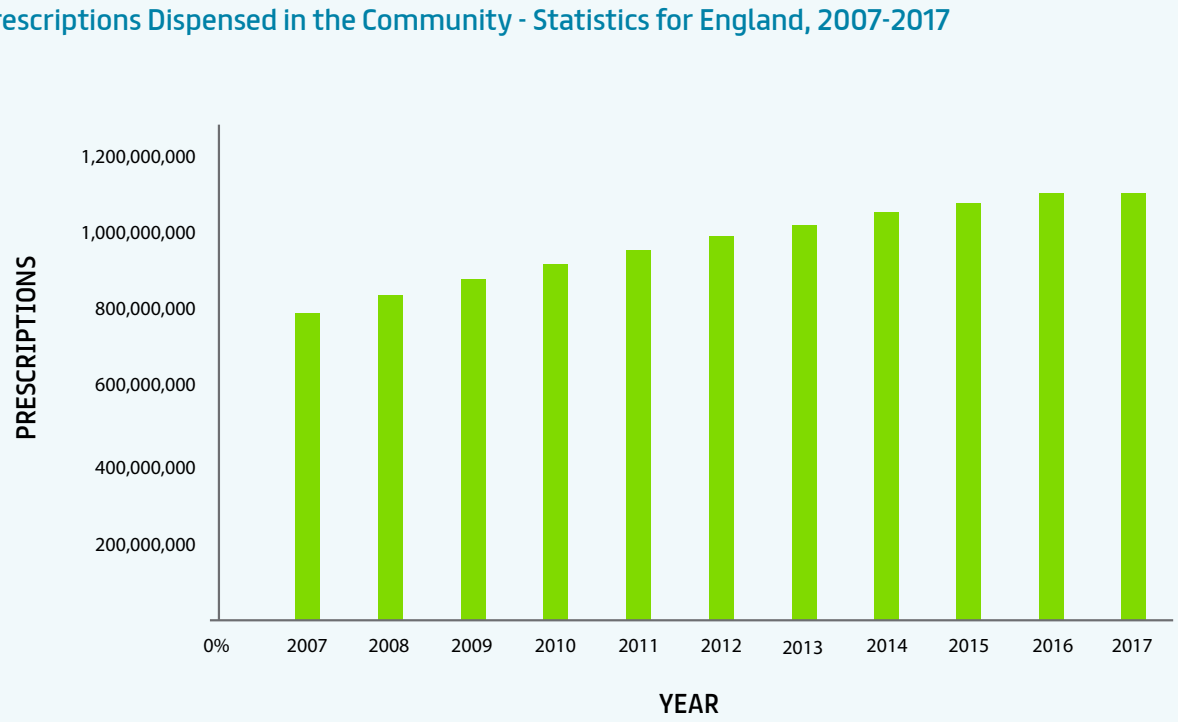
Changes in technology

Over the past decade there has been an increase in the availability of electronic prescribing and clinical decision support tools. While there is broadly thought to be a benefit to such inbuilt safety nets and alerts, there is also concern about alert fatigue and new kinds of errors associated with electronic prescribing, which is not available in all NHS settings. Where electronic prescribing is available there are a range of different systems which have not been integrated. There is concern that doctors are not prepared by UG education programmes to use various electronic prescribing systems as well as paper drug charts. The PSA is not perceived to address this need. Support applications on handheld devices (e.g. electronic BNF and local guidelines) are now commonplace.

Changes to population

Epidemiologic trends identified by the UK census indicate that the UK population is ageing, with an increasing prevalence of long-term conditions, so that people are living longer with more morbidity. This leads to increased polypharmacy and challenges efforts to minimise risk of drug-drug interactions and adverse drug events. There is an increase in volume of prescribing on a national scale (Figure 6 – National prescribing item trends).

Figure 6 - Number of prescription items dispensed in the community 2007-2017



Data from ONS, numbers published by NHS Digital[14].

Changes to workforce

The prescribing workforce has changed over the past decade, with increasing non-medical prescribers, increasing numbers of IMGs, and increasing emphasis on multi-disciplinary team models. There is more support from pharmacists in primary and secondary care settings, and all pharmacists will qualify as prescribers from 2026. This will significantly expand the pool of non-medical prescribers. Stakeholders noted that some doctors may not have the opportunity to sit the PSA as it is currently offered, and that it would be desirable for all doctors to sit the PSA. Some doctors may be unfamiliar with the UK names of medications and prescribing guidance and systems; therefore the PSA may be helpful to them in developing their prescribing skills. There was also support for non-medical prescribers to sit the PSA.

Changes to education and assessment

Respondents highlighted an increased culture of awareness around risks of prescribing and harms from prescribing errors. There is thought to be increased attention to prescribing in UG and foundation training, driven partly by the PSA, as well as workplace based prescribing assessments.

"Changes to the broader teaching and assessment of prescribing have evolved in UG courses and in the development of stronger management questions within the MSC question bank which overlap with content in the PSA" – Regulator

Some respondents mentioned the local emergence of pre-registration supervised prescribing experience programmes (i.e. purple pen, used for some final year medical students on assistantships to flag the need for a pharmacist to check their prescribing[23]). There was a perception by many respondents that foundation doctors seem better prepared to prescribe safely than they had been before the PSA was implemented. There was also felt to be an increased awareness of prescription medication dependency.

The MLA will be incorporated into final examinations at all UK medical schools from 2024. The majority of respondents to our call for evidence survey felt that the MLA would not be able to cover all of the content of the PSA, owing to the limited number of questions and single best answer format. There were also concerns expressed about over assessment and fragmented exam governance structures.

Changes to medications

Survey respondents said there are more licensed medications available and more subspecialist medications with a high potential for harm are used (particularly biologic therapeutics and immune modulating therapies). The Covid-19 pandemic generated new therapeutics and evidence for therapeutic agents at a rapid pace[24], so it is often difficult for doctors of all grades to keep up with new developments.

Shift in expectations and patient involvement in medication decisions

There has been a shift towards more patient centred communication and shared care decision making. Patients have more ready access to information via the internet and handheld devices leading to more and different kinds of questions about the medications suggested by their doctors.

Changes in best practice

There are expectations of adherence to increasing numbers of guidelines and pathways at the local and national levels. There is more emphasis on antibiotic stewardship, deprescribing, and dependency on prescription medications.

Considerations across the four nations

The PSA is a requirement for foundation trainees across the UK. Several respondents noted different availability of electronic prescribing, specifically that it has not yet been implemented universally.

Prescribing safety was perceived as important by survey respondents and stakeholders

Key themes that emerged from the survey responses and round table discussions were the impact of prescribing on patient safety and public trust, quality of patient care, reducing iatrogenic harm and associated costs, and reducing waste and pollution/climate change.

"The public need to be confident that prescribers can prescribe safely and effectively." – Individual response to stakeholder consultation

"Reducing harms from medication errors is an international focus with the WHO Global challenge, and overprescribing and de-escalation of treatment is currently a UK focus." – Member of staff at a school of medicine

"Prescribing is the major health intervention used in the NHS so it is essential that it is done properly to avoid medication related harm." – Member of staff at a school of medicine

There was a general perception that the prescribing of UK trainees is better than prior to the PSA but that prescribing errors remain a significant problem, exacerbated by increasing volume and complexity of prescribing. It was agreed there is a heightened awareness of prescribing errors and a rise in reporting of these errors. Multifactorial impacts on prescribing over the past decade outlined above, including electronic prescribing and increased pharmacist support, in addition to assessments, are likely to have had a significant impact.

Notable international comparators to the PSA in national prescribing assessments

Respondents commented that the PSA is being used internationally. There are no other national prescribing exams internationally, though there is a trial of a European prescribing exam being piloted currently[27]. It was noted that the United States Medical Licensing Exam (USMLE) includes prescribing as part of a holistic medical licensing assessment examination but has many more questions compared to the MLA.

5.2. Learning from the Prescribing Safety Assessment

Stakeholder engagement explored the role the PSA has played in driving prescribing education and training in medical and foundation schools, the extent to which it delivered on its original purpose, the impact of the MLA[10], and the potential implications of reducing or removing requirements for a national prescribing assessment.

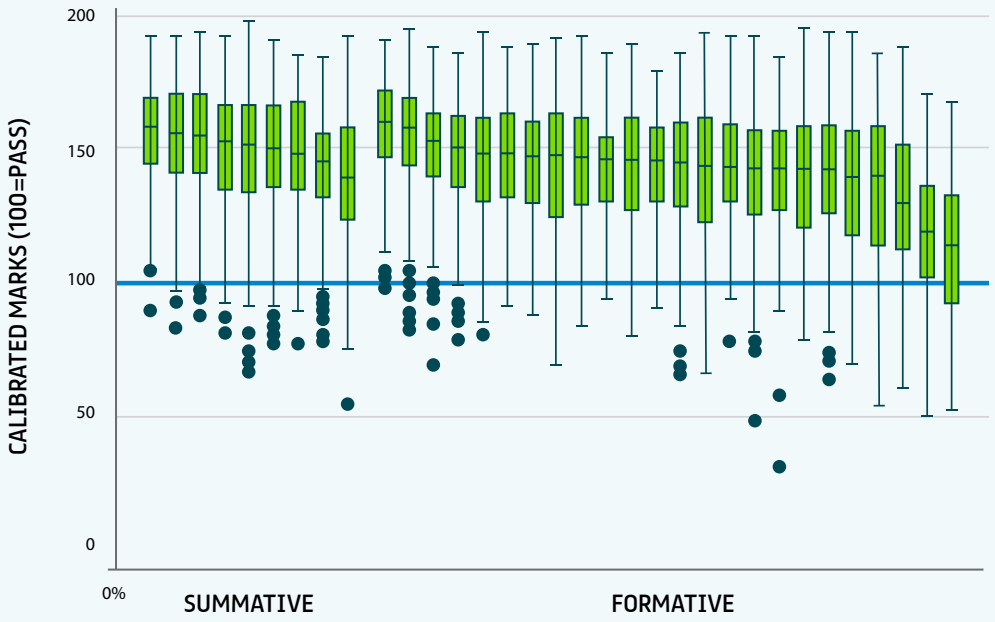
The PSA delivery team supplied psychometric information which demonstrates that the PSA is a robust and a reliable exam, and that disparity in medical school cohort performances have narrowed over time (Table 3). They also show better candidate performance overall from schools where the assessment is summative rather than formative (Figure 7).

The number of participating schools, candidates, pass mark and pass rate, as well as the reliability statistic of the papers are set out in Table 3. These data refer only to first sit attempts made by final year students in UK medical schools.

Table 3 – The participants involved in the PSA and psychometric properties of the papers from 2013 to 2022 (first time takers in UK medical schools)

Year	Schools	Candidates	Pass mark	Pass rate	Cronbach's α
2013	30	4,937	64.5	94%	0.73 – 0.79
2014	31	7,144	68.5 – 73.3	94%	0.67 – 0.74
2015	31	7,576	62.5 – 64.0	91%	0.74 – 0.78
2016	31	7,343	62 – 65.5	95%	0.74 – 0.77
2017	31	7,147	58.5 – 62.0	96.5%	0.74 – 0.77
2018	33	6,923	61 – 65.0	95.8%	0.69 – 0.74
2019	33	7,524	62.5 – 63.0	96.6%	0.80 – 0.83
2020	34	7,606	57 – 62.8	92.6%	0.72 – 0.80
2021	34	7,579	60.5 – 63.5	93.3%	0.74 – 0.81
2022	34	8,078	63 – 65.5	94.6%	0.78 – 0.81

Figure 7 - PSA 2022 Medical Schools

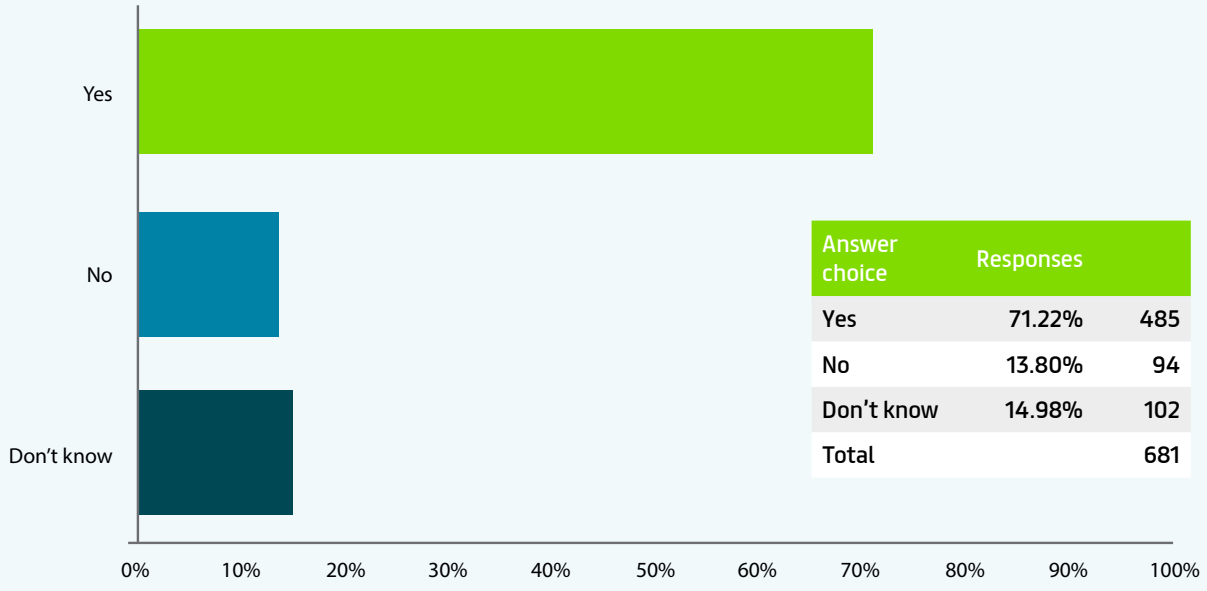


Box plots of calibrated marks for each UK medical school (anonymised) split by the summative versus formative (zero stakes) environment in which the assessment was taken by candidates.

(Data in Table 3 and Figure 7 were supplied by the PSA delivery team – see Appendix 9.4.)

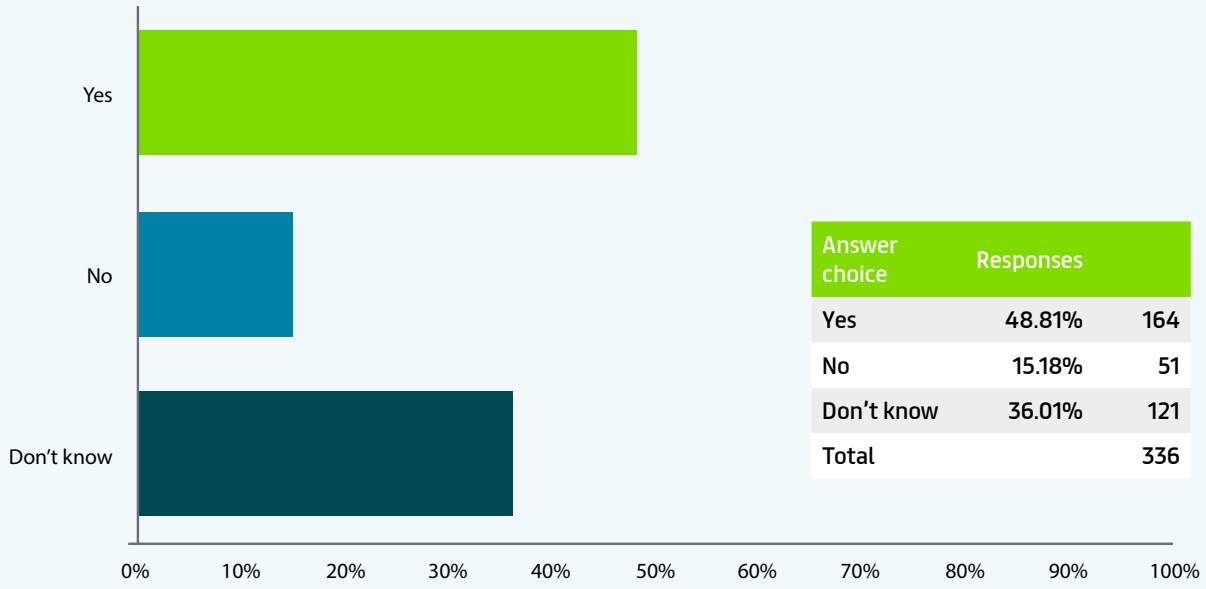
Within the stakeholder consultation online survey, there was broad support for the PSA as an important addition to medical education. It was perceived to address key areas of concern for patient safety and practitioner preparedness and to have made prescribing safer.

Figure 8 – Stakeholder consultation question: do you think the PSA is a useful resource in assessing students' competency in the safe and effective prescribing of medicines?



Answer choice	Responses	
Yes	71.22%	485
No	13.80%	94
Don't know	14.98%	102
Total		681

Figure 9 – Stakeholder consultation question: in your view, has the PSA improved prescribing safety?



Answer choice	Responses	
Yes	48.81%	164
No	15.18%	51
Don't know	36.01%	121
Total		336

"Prescribers are better prepared for real-life prescribing – the PSA makes prescribers improve to the required standard." – Senior pharmacist

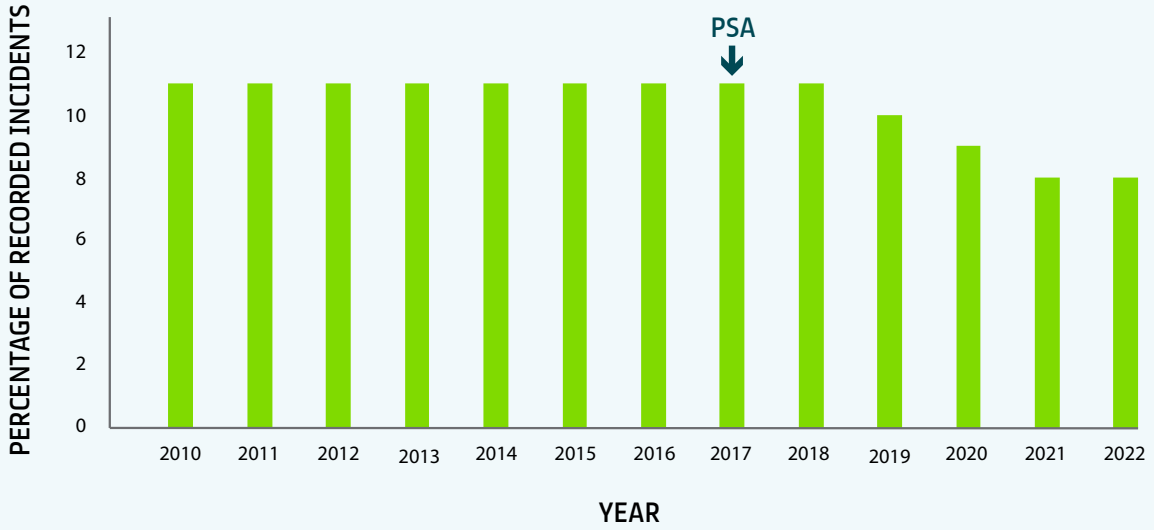
"It has enforced the need to get the right dose at the right time to the right patient. The exam highlights the benefits of prescribing effectively." – Medical student who is also a pharmacist

"... The PSA assessment of prescribing skills using the BNF is much more rigorous and realistic than what can be achieved using final examinations, which are usually closed-book...PSA is able to highlight particular areas of safety concern - insulin, opioids, IV fluids etc - and encourage students to prepare for these areas of concern." – Junior doctor

There were several areas where potential improvements were suggested to provide feedback on the impact of interventions in prescribing education and assessments. These include addressing the lack of a data collection system which would facilitate assessment of changes in prescribing errors over time (and thereby demonstrate impact or lack of impact of a prescribing assessment). The review team were unable to find any data suited to this purpose. However, high level data obtained from the National Reporting and Learning System (NRLS) and the GMC showed that normalised medication related patient safety incidents and the referral of doctors to the GMC for prescribing errors have both been reducing since the implementation of the PSA (Figure 10, Figure 11 and Figure 12). This data should be interpreted with caution as there have been multi-factorial changes in the prescribing landscape over the past 10 years.

"Among those of our teams who sat the PSA they say it has improved prescribing safety. A wider caution is that we aren't comparing it to anything else and the other changes to UG teaching and assessment are not explained so no comparison can be made. And teasing out which of the changes has had the most beneficial effect may be difficult." – Regulator

Figure 10 – Percentage of nationally reported patient safety incidents due to medications in England, 2010-2022



The introduction of the PSA as a mandatory requirement to pass from FY1 to FY2 occurred in August 2016, therefore 2017 would be the first year in which all FY2 doctors would have taken the PSA, and all FY1 doctors would be preparing for the PSA. Data is from the NRLS national patient safety incident reports (publicly available quarterly data reports and archives of reports published by NHS England[26]).

Data is presented as percentage of safety incidents reported rather than number of incidents reported due to consistent trends published by NRLS showing increasing incident reporting over the last 20 years.

Figure 11 – Longitudinal trends in all investigations by the GMC (blue) and those due to prescribing errors (green)

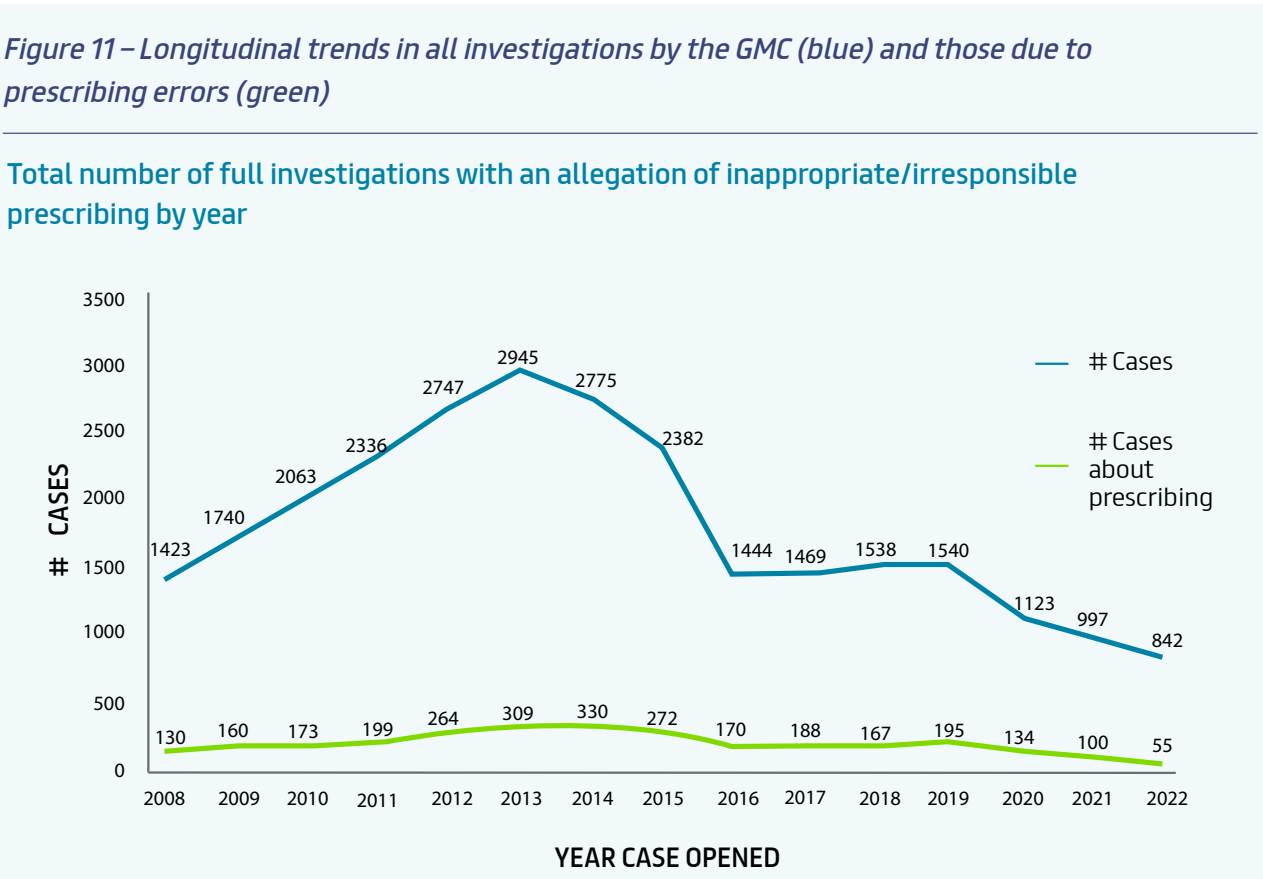
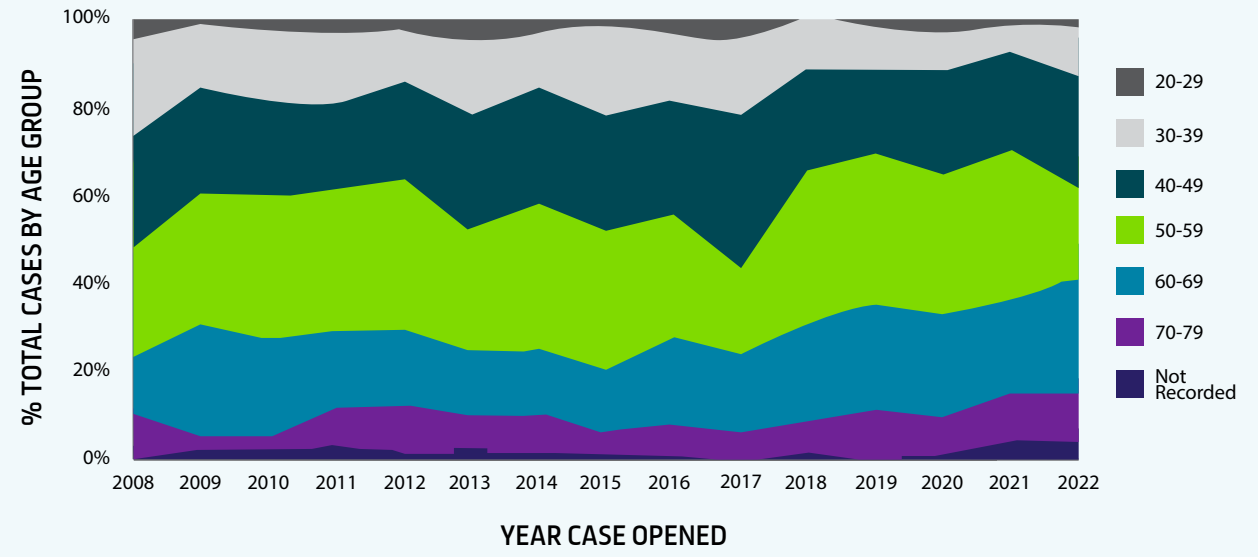


Figure 12 - Age of doctor at time of GMC referral for inappropriate/irresponsible prescribing



Data in Figure 11 and Figure 12 were provided by the GMC to the review team in February 2023.

Other stakeholder suggestions for improvement included the PSA becoming a universally summative examination. The assessment is already mandatory in some UK medical schools, but to ensure consistency across those able to prescribe, a majority of stakeholders (both those who responded to the survey and those who formed part of the round tables) felt that the PSA should be a mandatory requirement prior to practice. Furthermore, stakeholders felt that exam failure flagged areas of deficiency in clinical knowledge and skills or other difficulties likely to manifest in clinical practice. They thought that IMGs should be required to take a prescribing safety test as a prerequisite to practice in the UK.

> *"It has focused medical school undergraduate leads on the importance of prescribing and clinical pharmacology education. At present circa nine UK medical schools use the PSA in a summative form to determine graduation/progression from their programme. It also both encourages students to learn more about safe prescribing as well as giving them confidence in their own prescribing abilities once they graduate. In our experience based on feedback from students they appreciate the benefits of a structured prescribing programme and the competence assessment that is the PSA." – Member of staff at a school of medicine or pharmacy*

There was also consistent feedback that prescribing assessment should be standardised for all prescribers from diverse professional backgrounds. The recently published Future of Pharmacy report[27] highlights the importance of pharmacists as non-physician prescribers of the future (pharmacists will be independent prescribers at the start of registration from 2026). Published studies have confirmed that the PSA is a viable assessment tool for pharmacists[28,29]. Recommending specific assessments for allied professionals is beyond the scope of this report, but learnings from the PSA could be taken and considered.

Another highlighted concern was the potential difficulties IMGs face when sitting the PSA. Possible issues include access to less support than UK medical graduates have, the cost of the exam (paid by the IMGs themselves in some cases), differences in medications and prescribing practices internationally, and the timing of the exam at the beginning of the work placement. As a result, many IMGs may find the PSA more difficult than their UK counterparts. This is supported by data provided by the PSA team showing that pass rates for sittings of the PSA including IMGs and those from UK medical schools who have previously failed the PSA are dramatically lower than scores from UK medical school examination sittings (see Appendix 9.4).

> *"I'd definitely say it's more IMGs who have come in and found it more difficult...all the FY1s here who have to do the PSA after starting work didn't pass the first one" [went on to state this may have included several UK medical students, but the majority were IMGs] – Junior doctor*

Regarding potential risks or benefits to removing or reducing the role of the PSA, a substantial proportion of individuals felt that removing the PSA would put patient safety at risk.

> *"Increasingly complex polypharmacy in an ageing population increases the risk of adverse unintended health and safety outcomes. Any reduction in prescribing assessments of prescribers increases these risks further" – GP*

Stakeholders were also asked about the upcoming introduction of the MLA. There was considerable uncertainty in what the MLA will assess and how, as this examination has not yet been implemented.

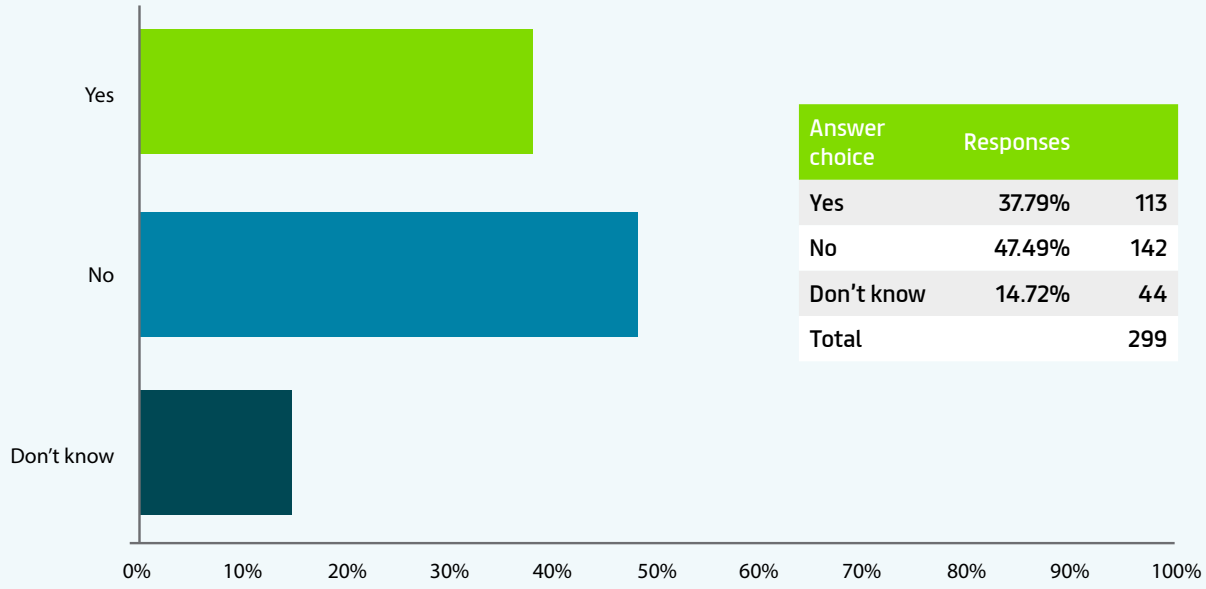
Many stakeholders felt that a sensible option would be to include the PSA with the MLA as a national requirement to practice. One way to do this would be the introduction of a third paper so the exam becomes a three-part test. This would allow the PSA to be more streamlined than a standalone assessment.

Overall, a large majority of stakeholders reported that the PSA played an important role in driving learning, standardisation of preparedness to prescribe, and safe prescribing, and should not be removed or significantly altered. However, there were some who had a more neutral view, specifically that the PSA provided a basic level of assurance around prescribing safety, and nothing more. There were a small number of stakeholders who felt that the PSA has not contributed to safe prescribing and lacks nuance. Concerns cited were that it increased stress and assessment burden, as well as expenditure and administrative burden, without proportionate benefits. Other assessment tools, such as SCRIPT[28], were cited as alternate options.

5.3. Current timing

The most appropriate timing for the assessment

Figure 13 - Stakeholder consultation question: if you have already responded that you think the PSA is useful, is the current timing of this assessment appropriate?



Answer choice	Responses	
Yes	37.79%	113
No	47.49%	142
Don't know	14.72%	44
Total		299

Stage of clinical training at which the PSA should be sat

The PSA is currently required to progress from FY1 to FY2. The majority of respondents expressed a preference for clinicians to pass a prescribing assessment before commencing FY1 work. For doctors, the best time was thought to be the final year of medical school. There was strong support for a standard prescribing assessment to be required for all prescribers irrelevant of profession. Difficulties were raised regarding how trusts should manage doctors who have failed the PSA but are currently practicing. Earlier sittings were suggested to allow time for remediation prior to practice and eliminate the need for prescribing limitations on practicing clinicians.

There was a view that experiential learning prior to or during FY1 would be helpful ahead of sitting the PSA. The PSA compliments the MLA and adds value in the sense of testing prescribing as an applied skill. The PSA may also be a useful surrogate marker of individuals who may require additional support during clinical practice.

> *"I think a baseline assessment of knowledge should be undertaken before entry to F1. But higher level WPBA should take place later in foundation training." – Postgraduate Dean*

Respondents to the survey and round table discussions felt that the PSA should be mandatory in UG curricula for all courses graduating professionals with a role in prescribing. This group is currently only doctors but will include graduating pharmacists from 2026. Survey respondents felt that healthcare professional graduates with a potential role in prescribing (which includes health and social care colleagues), should also take the PSA or equivalent. The PSA is currently summative in several UK medical schools. However, there was concern expressed about whether universities were the right gatekeepers of the PSA and that mandating a PSA pass as a requirement for graduation posed challenges to some university regulations.

Stakeholders suggested that the PSA may need adaptation to the landscape of the MLA. Mapping, or blueprinting of content across the PSA and MLA would be helpful. The different formats of the PSA and MLA could be used advantageously to focus on complimentary elements of prescribing safety.

Equitability between UK graduates and international medical graduates

Many respondents expressed concern about ensuring equity in approach between UK graduates and IMGs. It was felt that the MLA would be a step forward in this regard. This would also be the case for the MPLA test. The majority of stakeholders thought it was appropriate for all prescribers to take the same assessment as a pre-requisite to prescribe in the UK.

5.4. Regulation

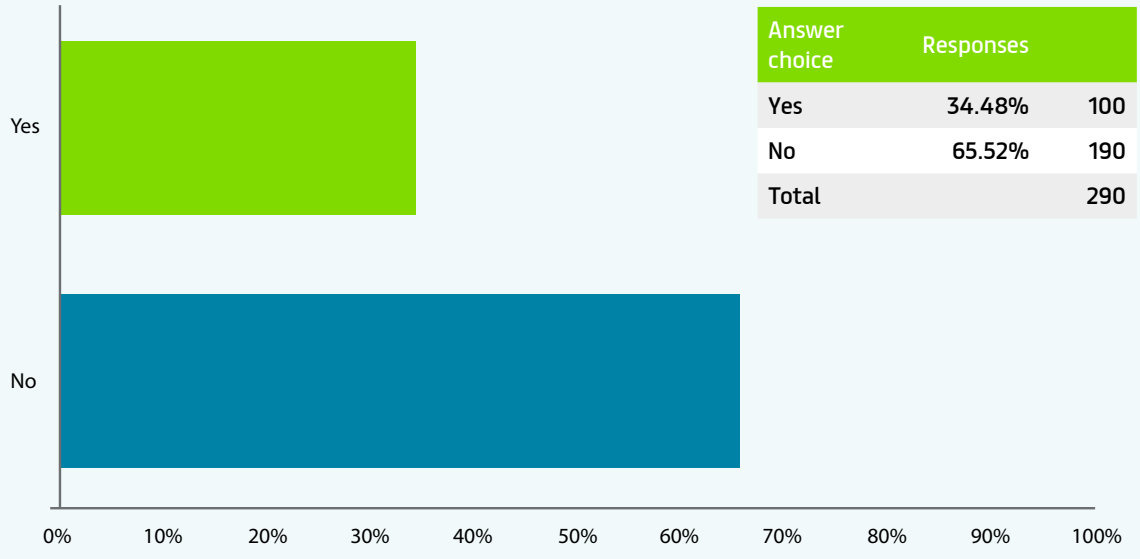
Note: the comments from survey respondents and other stakeholders in this section indicated a general lack of understanding of the precise meaning of the terms regulation and regulatory oversight. The GMC does not regulate per se, but provides regulatory oversight. However, there is a consensus that the GMC should have regulatory oversight of the PSA.

For the purposes of the review, these are the definitions used:

Regulation	Examination regulations which are written rules for how an exam is run
Governance	Overall rules as determined by university principles
Regulatory oversight	Arm's length oversight of the framework of the assessment system

Considering regulatory oversight of the PSA by the General Medical Council

Figure 14 – Stakeholder consultation question: the PSA is the only mandatory knowledge and skills assessment in UG or PG medicine that is not regulated by the GMC. Do you think this is appropriate?



Answer choice	Responses	
Yes	34.48%	100
No	65.52%	190
Total		290

Stakeholders were split as to whether they believed that regulatory oversight of the PSA by the GMC would be beneficial, with respondents highlighting both perceived advantages and disadvantages. The key themes presented for or against are outlined below.

Impact on the credibility of the PSA

A significant proportion of respondents argued that the PSA would benefit from greater credibility if it had regulatory oversight from the GMC. However, others argued that there was a lack of trust in the GMC by the medical profession, resulting in differing opinions about whether oversight by the GMC would strengthen or undermine its credibility.

Quality assurance

A key theme supporting the regulatory oversight of the PSA by the GMC was the belief that this would support the standardisation of prescribing practices and would guarantee that medical prescribers meet a basic level of competency.

> *"...added legitimacy and simplifies educational governance" – Member of staff in a school of medicine or pharmacy*

This theme was further developed by those who believed that successful completion of the PSA should form part of the requirements to join the UK medical register. These stakeholders felt that prescribing knowledge and skills should be mandatory requirements for medical practitioners and would thereby fall under the remit of the GMC, who control and maintain the register of medical practitioners within the UK. Further arguments in support of regulation by the GMC were related to fitness-to-practice (FtP) concerns, arguing that poor performance at the PSA or unprofessional conduct when sitting the PSA could then be managed appropriately and taken more seriously, with possible consequences for medical registration.

However, concerns were raised that the PSA may be modified if it was under regulatory control of the GMC. Stakeholders argued that the GMC lacks expertise in the field of pharmacology and therapeutics, and had concerns that the PSA may be altered or oversimplified by the GMC.

Alignment with other assessments

Some respondents felt that regulatory oversight of the PSA by the GMC may reduce redundant testing of similar knowledge and skills across multiple assessments. As the GMC are responsible for introducing the MLA, it was felt to be logical that combining or aligning of these assessments should fall under the oversight of the GMC. However, others argued that there would probably be practical difficulties incorporating the PSA into the licensing assessment, citing challenges that had been encountered setting up of the MLA.

> *"[in reference to the PSA being regulated by the GMC] Greater credibility of the assessment, although the preferred option is that the assessment is amalgamated." – Member of staff in a school of medicine or pharmacy*

Others proposed that the knowledge and skills assessed in the PSA should be made part of the medical school curriculum, with medical schools taking the responsibility to ensure that their students are able to follow safe prescribing practices and that they are made aware of the expectations around prescribing for junior doctors.

Note: Prescribing Medications Safely is included in the GMC document Outcomes for graduates (Outcomes 2).

Regulatory oversight and governance

A further argument supporting the oversight of the PSA regulation by the GMC was the perception that the PSA would benefit from the robust governance processes of the GMC. These stakeholders felt that such oversight would be valuable and provide improved governance at a strategic level. It was also argued that a key role of the GMC is to oversee medical education and therefore it was felt that the oversight of PSA regulation by the GMC would fit with the principles of the organisation.

> *"This would provide consistency with all other postgraduate assessments for doctors in training/ practice in the UK" – Foundation School Director*

Multidisciplinary aspect of the PSA

Respondents to the stakeholders' survey and round table discussions highlighted that the PSA is used by multiple healthcare professionals, not solely medical doctors. The GMC is the regulator for medical doctors, not other allied healthcare professionals, and therefore it was felt regulation of the PSA by the GMC would not unite professional governance under one body. An alternate option that was suggested is the national health system as the regulator due to employment of all prescribers.

Increased burden on the GMC

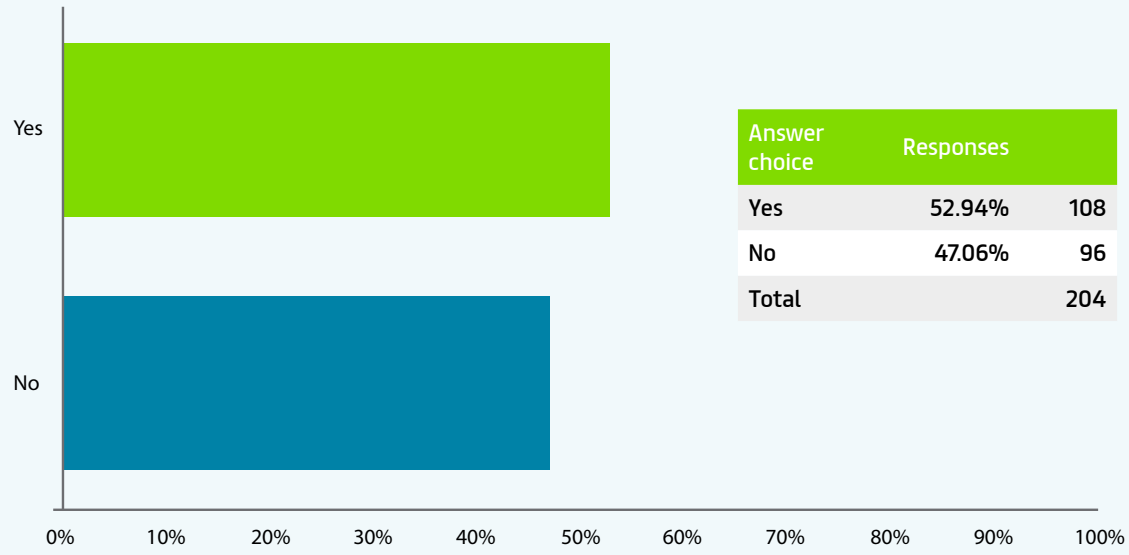
Concerns were raised with regards to the increased bureaucracy and cost that regulatory oversight of the PSA may bring to the GMC, with specific concerns raised with regards to possible delays in doctors joining the medical register. Some stakeholders reported that they believe the GMC is already over-stretched and the additional burden would detract resources.

Role of the different organisations currently involved with the PSA

Respondents noted that several organisations are currently involved with the delivery and regulation of the PSA. Concerns were raised with regards to the future roles and responsibilities of these organisations if the GMC were more involved, specifically with regards to ensuring that the collaborative working and 'community of skill' were not lost, and that future roles of different organisations were clearly defined. Concerns were also raised with regards to the degree of control and input current organisations may have on future iterations of the PSA, if it were to come under the regulatory control of the GMC.

5.5. Prescribing Safety Assessment governance

Figure 15 – Stakeholder consultation question: does the current governance oversight of the PSA need review?



Answer choice	Responses	
Yes	52.94%	108
No	47.06%	96
Total		204

Collusion

During the Covid-19 pandemic a computer system picked up identical answers from matched pairs of candidates from the same institutions indicating that collusion had occurred.

There was ambiguity in the allocation of responsibility to manage this, which highlighted the need to review the governance of the PSA and its regulatory oversight.

Governance framework

It will be important to create a framework so that there is consistency and standardisation. Despite there being resounding support for this, there are some differences in opinion about how this could be done, who is ultimately responsible and what is possible within the current legislation.

"I think the recent issues around the alleged cheating from F1 doctors and medical students have highlighted significant problems with the governance of the PSA, and a reluctance of the current provider to take responsibility for investigating and managing such cases." – Postgraduate Dean

"Currently governance of the PSA is well structured with oversight from the PSA Exec committee with representation from the chairs of the assessment board and standard setting group. Alignment of the PSA with the MLA to ensure practices, procedures and coverage are appropriate and relatively uniform would require a review of the current governance structures." – Organisational response

Role of the GMC

There was an overwhelming view in the written survey responses that the current governance of the PSA requires some review and revision. This was not reflected in the binary responses as several respondents did not comment. A large swathe of those who gave written responses proposed that the GMC should play a role. The shape of this role varies, but at the very least should provide guidance to help formulate appropriate examination regulations.

> *"... an individual assessment, the subject matter experts are usually the organisation that designed that assessment and had it signed off by GMC. And so I don't think it's one organisational together. I think the governance has to include both the assessing organisation and the regulator to agree that there's a governance structure and ... actually it's in combination between the two." – Postgraduate Dean*

It should be noted that while an appropriate governance framework needs to be developed, there is a distinction between examination delivery and regulatory oversight. Currently, the BPS and MSC deliver the exam and have done so since its inception. If there is to be a governance review, who carries out the delivery of the assessment should also be considered. The current standard setters and test makers are experts in the area, and it will be important to maintain that knowledge.

5.6. Sustainability and finance

Funds to support the annual construction and delivery of the PSA will only be sufficient until 2024, based on the current PSA funding and delivery model.

The true cost of delivering the PSA is difficult to quantify, as the MSC and BPS have reported providing substantial staff delivery time, in addition to a heavy reliance on a volunteer workforce that makes up the assessment board and executive committee. In terms of current annual direct costs for delivering, this is estimated at between £300,000-£400,000, made up of £180,000 excluding staffing, and a further estimate £157,000 of staffing costs (which does not include further equivalent pro bono cost for volunteer activity).

While originally funded by grants from Health Education England and NHS Education for Scotland, this funding ceased in 2015/2016. Subsequently, the BPS and MSC continued to contribute to the fund but have reflected that payments do not reflect true costs of assessment delivery, thus raising concerns around long-term sustainability. Given estimates around delivery costs and the size of the fund and staff time required, the funding will be fully depleted during 2024.

In the context of the review, any funding model will depend on the overall direction of the PSA.

Responses to stakeholder consultation

It was felt that there are various options for where the responsibility to fund the assessment sits, and much of this depends on the purpose of the assessment and who requires it to be taken. Many agreed that identifying the core purpose and framing of the assessment would inform who is responsible for paying for it. It was clear from both the stakeholder consultation online survey and round table discussions that stakeholders did not think it was appropriate for any direct charges to be made to undergraduate UK medical students, but that this is more complicated for postgraduates and IMGs.

The prominent view from stakeholders was that the PSA should be funded alongside (or as part of) the MLA, and that there should be no self-funding model whereby those sitting the assessment as part of medical training should be required to pay.

There was a broad consensus that if 'the beneficiary pays', the beneficiary in this context needs to be identified (and could refer to trusts, medical schools, the public etc.)

> *"It is in the interests of society to have capable, competent clinicians, and if this is part of achieving that, then that has to be funded." – Deputy Head of Medical School*
>
> *"The PSA should be funded by the users of the assessment - i.e. the universities and foundation schools. It is anomalous that a high-quality assessment, which drives learning and assures competence in a core skill for new doctors, should be expect[ed] to generate commercial income to support its role." – Response on behalf of a medical school*

There was stakeholder consensus that those sitting the assessment should not have to pay to do so. The predominant opinion was that students should not be required to pay for examinations required to practise and improve patient care, given barriers to entry to healthcare professions, alongside challenges with workforce retention.

"Fund alongside MLA - a self-funding model is not appropriate for assuring the competence of medical graduates who have a major role in managing the medicines and health of vulnerable patients and public." – Response on behalf of a medical school

"The PSA should not be funded by the individuals sitting the assessment. If the PSA continues and remains as a mandated F1 assessment (rather than an undergraduate assessment), then funding from HEE should be explored. If the PSA sits alongside the MLA as a mandated requirement for graduation, it should be funded alongside the MLA." – Member of staff at a medical school

Finally, it was noted that secure funding needs to be addressed without compromising the independence of the assessment. Should partnership funding be explored, a framework and appropriate terms would need to be established to retain current expertise.

"A secure funding source needs to be found, but this comes with the risk of being tied-in and loss of independence." – Member of staff at medical school

Expanding the PSA to other professional groups or internationally

The majority of stakeholders thought that the PSA should be expanded to non-medical prescribers. It was felt that all prescribers should be required to pass the same competency assessment to ensure they can prescribe safely and effectively.

"Nonmedical prescribers should already have to sit the PSA unless they're prescribing in a very narrow field. Nurse practitioners, PAs, pharmacists - if they're prescribing, they should sit the PSA." – Member of staff at a school of medicine or pharmacy

There would be a continuing need for oversight with validation appropriate to the context or purpose of user groups.

"The PSA would need to be validated for that purpose, and we must not assume that validation in one context transfers to another. I'm not opposed to it being used in other contexts, but oversight is important." – Consultant with expertise in medical education

Some respondents highlighted that if the PSA were to be expanded to other groups, tailoring to specific areas of clinical practice would be required, but a shared assessment structure to enable a consistent assessment approach could be applied.

By contrast, others disagreed with expanding to other professional groups, as existing assessments for other professional groups are specialised to their areas of practice.

"As non-medical prescribers already sit fairly intensive examinations alongside prescribing modules, it would feel unfair to impose it on them." – Member of staff at medical school

Similarly, the current format of the PSA is based on the specific medical education model, which may not transfer across other professions.

"Not appropriate - the PSA is taken following a 5 year course and where students learn prescribing throughout and then are closely supervised as Foundation doctors. The PSA is more focussed to secondary care at present. Other health care professionals undertake prescribing training when they have considerable workplace experience and the PSA is not a substitute for this or medical training." – Doctor

"They should have a separate exam that is attributable to their needs. Studies were recently done by the NIHR, in general practice, about expanding scope of AHPs and they were not as effective as doctors. Healthcare is not and should not be a one size fits all approach." – Medical student

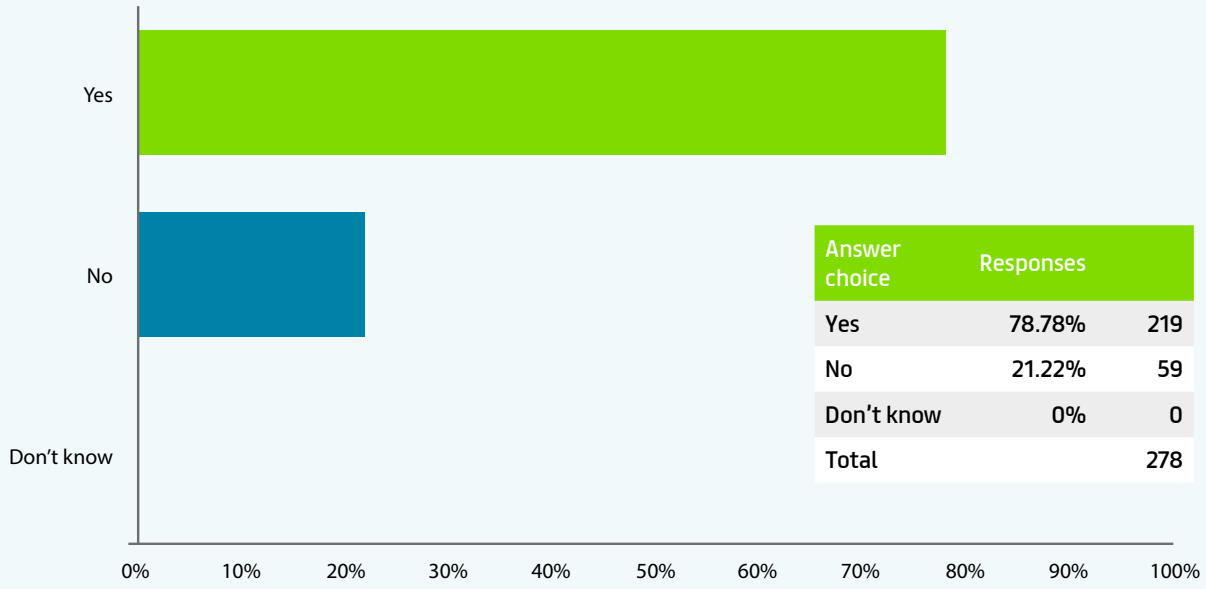
There are already published reports of some successful international expansion experience, through collaborations with Australia, New Zealand, and Canada[31,32]. To support further international expansion, successful collaborations would need to ensure that country-specific material is included. As such, adaptation would be required for this to be done effectively.

"Support in principle internationally, if can make adjustments for national variations in practice and drug licensing." – Member of staff at a medical school

While very few respondents commented on international expansion, those that did highlighted income generation as a potential benefit.

5.7. Looking to the future

Figure 16 – Stakeholder consultation question: what should the future of national prescribing assessment in the UK look like? Should there continue to be a national PSA?



Answer choice	Responses	
Yes	78.78%	219
No	21.22%	59
Don't know	0%	0
Total		278

The extent to which there is an extended role for UK national assessment in supporting safe prescribing for other healthcare professionals e.g.- pharmacists, physician associates

Prescribing assessment standards need to be consistent across all healthcare professional groups which have prescribing duties. In general, respondents felt that regulation of non-medical prescribers is not standardised, and all prescribers should be assessed to the same standard irrespective of background discipline. Where they have the same prescribing rights, all should prescribe consistently and, if there is an assessment, sit the same assessment out of an equality principle. However, ideally, prescribing assessment objectives need to be mapped against each discipline's curriculum objectives, and assessment standards need to be tailored and adapted to each professional group, as curriculum and level of knowledge may differ.

> *"It is logical that any prescriber should meet a similar requirement even if the mechanism to assess it varies." – Regulator*
>
> *"YES. All prescribers should be made to sit the same exam. PAs, pharmacists, & prescribing nurses." – A member of staff at a medical school or pharmacy school*

A national prescribing assessment provides a new opportunity for healthcare to consider how we work inter-professionally. Some respondents highlighted an opportunity for strengthening interprofessional learning and working in the prescribing space. For example, there is a shift towards more multi-disciplinary team clinics including specialist nursing or physician associates where specialist prescribing skills are advantageous. The PSA could be the final assessment for any professional seeking independent prescribing rites.

"... as a non-medic prescriber, for us it's massive change, so we're going to be producing prescribers by the end of 2026. You're going to graduate as a pharmacist prescriber. And so that's going to be a big thing. And we're looking at the PSA." - Pharmacist

The role for a prescribing assessment in continuing professional development/ lifelong learning as it relates to safe prescribing

There was no clear consensus in support of a prescribing safety assessment as part of continuing professional development (CPD). Some respondents felt that a prescribing assessment is essential as part of CPD/lifelong learning as this has benefits for patient safety. However, a national prescribing assessment is not the only way to demonstrate prescribing competence. Furthermore, some respondents commented that a prescribing assessment should only be sat if there are recurrent prescribing errors identified within an individual prescriber's practice or may be especially useful for those changing roles or returning after a period of absence. The GMC have shared evidence with the review team demonstrating that the highest rate of FtP referral involving prescribing related errors is made by doctors in their 40s and 50s (see Figure 12, page 25).

"Safe prescribing should form part of CPD activities." – Member of staff at a medical school or pharmacy school

"Yes and no - good prescribing is a necessary lifelong (or career) skill but mandatory CPD is already a considerable burden, for individuals and organisations." – Foundation School Director

Some feedback suggested that with rising multimorbidity and polypharmacy, patient needs have become more complex and a prescribing assessment is increasingly helpful in this regard.

Some respondents fed back that a prescribing competency only needs to be certified once and does not require repeated assessments which would add an unnecessary burden on health and care professionals. Feedback included that prescribing is already assessed as a competency throughout UG and PG training both formatively and summatively in other contexts e.g. MLA, WPBAs and PG exams. Therefore, reassessment need not be considered unless there are significant changes to prescribing or concerns about prescribing.

The evidence base needs to be strengthened about the value added of a prescribing safety assessment and reassessment as part of CPD

Further research is required into effective methods for demonstrating up-to-date learning about prescribing safety throughout a career at different stages.

When revalidation was introduced in 2012, a decision was made not to add a written test of knowledge. This was because of concerns from the profession that it was not deemed appropriate for more experienced clinicians as it was not possible to take account of the complexity of their area and context of practice. Overall, although there was support for CPD in safe prescribing, and some kind of evaluation, there was not strong support to introduce regular testing of all clinicians.

6. Next steps

This report has collated evidence to address the Terms of Reference for the independent review of the PSA. There are a number of recommendations which will require further consideration by the BPS, the MSC, medical schools, the GMC and other regulators. The recommendations, responsibilities and timelines for these recommendations are set out in the table below.

It is clear that the testing of prescribing competence is important, and it is also important that organisations work in harmony to address the issues highlighted in this report, and to take note of and deliver the recommendations.

The current PSA is a very good test. There is an opportunity to enhance it even further by thoughtful amalgamation with the MLA to create an MPLA test. This would require the two tests to be blueprinted together, and for a robust set of rules to be determined about issues like the compensation between papers in making pass/fail decisions. No organisation can achieve this in isolation; therefore, we suggest that if the recommendations are accepted, a partnership board incorporating an implementation executive group is formed to oversee the changes required of the many stakeholders involved. This will make a significant improvement to the experience of patients, the public and prescribers.

Table 4 - Timelines and implementation of findings

	Recommendation titles	Proposed timeline	Suggested organisations with oversight of implementation
1.	Appropriate and mandatory assessment of prescribing should remain as a condition of practice for doctors in the UK	Ongoing	GMC MSC BPS UKFPO
2.	The addition of the PSA to the MLA should be considered as a pragmatic suggestion to form a Medical and Prescribing Licensing Assessment (MPLA)	It may not be possible for changes to be made before the first sitting of the MLA in 2024. Efforts should be made to implement change as soon as feasible Implementation should have commenced within five years	GMC MSC BPS Medical schools
3.	The examination regulations need standardising and publishing	Within a year	Medical schools MSC BPS GMC
4.	The PSA or combined MPLA should be considered as a requirement for medical practice in the UK	Implementation should have commenced within five years	GMC MSC BPS Employers
5.	The GMC should have regulatory oversight	Implementation should have commenced within five years	GMC MSC BPS
6	If implemented, the proposed MPLA should be funded in the same way as the MLA	Implementation should have commenced within five years	Medical schools GMC MSC BPS

7. Abbreviations

ADR	adverse drug reaction
AKT	Applied Knowledge Test
BPS	British Pharmacological Society
CPD	continuing professional development
CPSA	clinical and professional skills assessment
EDI	equity, diversity and inclusion
FSD	Foundation School Director
FtP	Fitness-to-practice
FY1 and FY2	Foundation Year 1 and Foundation Year 2 doctors. Sometimes referred to as F1 or F2.
GMC	General Medical Council
HEE	Health Education England
IMG	international medical graduate
MLA	Medical Licensing Assessment
MPLA	Medical and Prescribing Licensing Assessment
MSC	Medical Schools Council
NRLS	National Reporting and Learning System
PG	postgraduate
PGx	pharmacogenomics
PLAB	Professional and Linguistic Assessments Board test
PSA	Prescribing Safety Assessment
SBA	single best answer
UG	undergraduate
UKFPO	UK Foundation Programme Office
WPBA	workplace-based assessment

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9. Appendices

9.1. Terms of Reference

When the review was commissioned, the BPS and MSC developed a scoping document in the form of a draft Terms of Reference, which was shared with the Revie Chair and Oversight Group.

At the first Oversight Group meeting on 19 October 2022, these were updated and ratified. The final version can be accessed at:

https://www.bps.ac.uk/getmedia/a0d31d73-5de3-49e0-9f2e-798fcd65dca2/PSA-Review-Terms-of-Reference-agreed-October-2022.aspx

9.2. Oversight Group meetings

Meetings took place monthly between October 2022 and March 2023. An agenda and relevant papers were shared with the group prior, and minutes shared with the group following each meeting. Minutes from the previous meetings were ratified by those present at meetings 2 to 6.

Where Oversight Group members were unable to attend meetings, some elected to delegate a proxy, usually a deputy or colleague from their own department or organisation.

Meeting dates:

Date	Purpose
19 Oct 2022	Introduction
16 Nov 2022	Approve and launch stakeholder consultation
13 Dec 2023	Interim update and plans for stakeholder meetings
18 Jan 2023	Plans for round table discussions
20 Feb 2023	Consider final recommendations
07 Mar 2023	Finalise recommendations

An attendance log is held by the secretariat Project Manager.

9.3. Additional scoping meetings with relevant stakeholders

Date	Meeting	Oversight Group/Core Team present
06 Dec 2022	PSA Academics/deliverers	Jane Dacre, Emma Magavern
19 Dec 2022	GMC with Colin Melville on prescribing error data	Jane Dacre, Colin Melville, Emma Magavern, Sam Kennard
10 Jan 2023	Data dashboard (EACP2) with NHS Business Services Data & Insight Team	Jane Dacre, Emma Magavern, Sam Kennard
26 Jan 2023	MSCA on overlap between MLA AKT and PSA	Jane Dacre, Emma Magavern, Sophia McCully, Sam Kennard
03 Feb 2023	Discussion with Brian MacKenna on NHS prescribing data	Jane Dacre, Emma Magavern, Sam Kennard
08 Feb 2023	COPMeD	Jane Dacre, Sam Kennard, Oversight Group members attending COPMeD in their capacity as members of COPMeD.
22 Feb 2023	HEE – Foundation School Directors meeting	Jane Dacre, Mike Masding, Sam Kennard

9.4. PSA delivery team submission

An evidence pack was submitted digitally by the PSA delivery team on 4 February 2023 for consideration by the Review Team.

This included:

0. Synopsis of evidence submitted to the Dacre review
1. The case for a national prescribing assessment
2. PSA reliability and validity
3. Impact on prescribing education in UK medical schools
4. Improvements in PSA performance over time
5. Preparedness of medical undergraduates
6. Use of the PSA in other healthcare professional groups
7. International recognition and use of PSA
8. What impact, if any, will the MLA have on the need for the PSA
9. Consideration of the future role and governance of the PSA
10. PSA documentation

The data provided was compiled by the PSA team, including:

- PSA Medical Director
- PSA Assessment Board Chair
- PSA Standard Setting Group Chair
- PSA Executive Board /Assessment Board member
- PSA Lead Consultant

Requests for access can be made to the British Pharmacological Society.

9.5. Stakeholder consultation

The Stakeholder consultation survey, developed by the Oversight Group, was open to responses from 23 November 2022 to 16 January 2023.

Survey questions were a blend of binary and free text responses, and can be viewed at:

https://www.bps.ac.uk/getmedia/d6c554e6-15b0-4bbf-bdf5-6783c1c340be/PSA-Review-Stakeholder-Consultation-Questions.aspx

Respondent information:

707 responses received

89% responded as individuals (631)

11% responded on behalf of organisations (76)

37% medical students (233)

31% members of staff at medical and pharmacy schools (195)

32% other (198 – of these 33 respondents identified as foundation doctors)

9.6. Round table discussions

Session 1: 15 February 2023

Foundation doctors, medical students and a patient advocate.

Facilitators and moderators

- Professor Dame Jane Dacre (Chair)
- Dr Mike Masding
- Dr Lorraine Parks
- Lara Akinnawonu
- Professor Michael Okorie
- Dr Emma Magavern
- Sophia McCully

Questions for discussion

1. A lot has happened over the last few years in terms of the wider prescribing landscape – do you have any reflections or anything you'd like to share about this?
2. What are your views of the PSA?
3. Do you think the current timing of the PSA is right? Why or why not?
4. If not, when would you suggest is more appropriate?
5. Are you aware of any regulations for the PSA – for example what the protocol would be if cheating was suspected, if someone were to fail the exam, or if someone didn't think they were given the correct score?
6. What are the experiences of yourself if you are an IMG, or those of your IMG peers, of the PSA?
7. What is your knowledge about the upcoming MLA and how do you feel this will interact with the PSA?
8. Are there enough, too many or too few assessments for medical students?
9. Is there anything not mentioned that you'd like to add?

Session 2: 22 February 2023

Those involved in medical/prescribing education and assessment, FSDs, HMEs, PG Deans etc.

Facilitators

- Professor Dame Jane Dacre (Chair)
- Dr Mike Masding
- Professor Kate Thomas
- Dr Emma Magavern
- Dr Marina Soltan
- Sophia McCully

Questions for discussion

1. A lot has happened over the last few years in terms of the wider prescribing landscape – do you have any reflections or anything you'd like to share about this?
2. What are your views of the PSA?
3. What are your views on the timing of when the assessment takes place?
4. There are ongoing discussions about the overassessment of doctors – what are your views?
5. What are your thoughts on how the PSA is currently governed? In cases of irregularity or collusion, what should be done? How do we prevent this from happening?
6. How else can we assess prescribing, and how should it be organised if the PSA was not available?
7. Who should pay for assessments like the PSA – organisations or individuals?
8. Is there anything not mentioned that you'd like to add?

Additional thanks

Thank you to all those who have supported the review process by providing evidence or engaging with delivery of the review, including:

Respondents to the stakeholder consultation survey, and attendees at round table discussions

Those who shared the stakeholder consultation survey with their networks

The PSA delivery team

All at the BPS and MSC who have contributed to the review

The GMC

Data and Insight Team (External Reporting Services), NHS Business Services Authority

Namita Kumar, Derek Marshall and Sarah Huntbach

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