Prescribing Safety Assessment

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Medical Director, PSA
Background to the PSA
Prescribing

Core business for UK healthcare

- Hospital and primary care

Majority prescriptions appropriate, safe, effective but

Evidence of suboptimal prescribing is clear

- Prescribing errors
  - around 10% hospital prescriptions
  - around 5% primary care prescriptions

- Adverse drug reactions
  - cause around 6% hospital admissions
Concerns about FY1 Prescribing

• Illing et al (2008)
  – How prepared are medical graduates to begin practice?
  – A comparison of three diverse UK medical schools.
  – Prescribing considered to be the key problem
  – Over 80% graduates failed a prescribing assessment

• Skills for Health Report (2009)
  – Junior doctors in the NHS: Preparing medical students for employment and post-graduate training
  – 65% of respondents considered prescribing was an issue

• EQUIP Study (2009)
  – An in-depth investigation into causes of prescribing errors by foundation trainees in relation to their medical education
  – 125,000 prescriptions in North-West England – error rate 9%

• PROTECT Study (2011)
  – 45,000 prescriptions in Scotland – error rate 7%

**KEY MESSAGES**

New doctors take on a large part of the prescribing in NHS hospitals
They felt underprepared for prescribing
Lack of practice during training
Part of their job that they feared the most

Trainers agreed that prescribing was a skill that required further emphasis
An in depth investigation into causes of prescribing errors by foundation trainees in relation to their medical education.
EQUIP study. Dornan et al, 2009

- Hospitals in north-west England
- **124,260 medication orders** were checked
- **11,077 errors** were detected
- Overall **mean rate of prescribing errors** was **8.9%**
  - **FY1 doctors**: 50,016 medication orders - 4190 errors (**8.4%**)
  - **FY2 doctors**: 34,781 medication orders - 3568 errors (**10.3%**)

- Error rates during **care process**
  - admission (13.4%), during stay (7.6%), rewrite (3.9%), discharge (6.4%)

Available at http://www.gmc-uk.org/about/research/research_commissioned_4.asp

- Clearly **defined learning outcomes** related to prescribing medicines
- A **national e-Learning strategy** to support students in reaching these outcomes
- A **reliable assessment** to enable students/schools can demonstrate that these learning outcomes have been met
- **Unified prescription charts**
- Improved **training** and **access to the BNF**

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[Logos of various organizations]
Justification for a national prescribing assessment
Why a national prescribing assessment?

- Clinical governance/patient safety reasons
- Educational reasons
- No validated, reliable and widely accepted measure of prescribing performance currently exists

A national prescribing assessment would
- pool academic resources
- serve to raise and unify standards (drive learning)
- provide equity in assessment
- allow us to measure educational success
Prescribing Safety Assessment

- Developed jointly by MSC Assessment and British Pharmacological Society since 2010
- Supported by input of other stakeholders such as GMC, NHS employers, Foundation programme, BMA medical students, Postgraduate Deans
PSA: Basic principles

• Should be **passed before qualification** and subsequent assumption of NHS prescribing responsibilities
• Designed for **final year medical students**
• Pass-fail assessment that **can be repeated** if necessary
• Delivered **online** from a central server
• ‘**Open book**’ with access to the *British National Formulary*
• Assesses prescribing-related skills **relevant to new doctors** that map onto those in *Tomorrow’s Doctors 2009*
• Will test **skills and deductive powers** (as well as knowledge)
• Set at the **level of early postgraduate practice**
Development of the PSA
PSA Governance

- MSC Assessment
- British Pharmacological Society
- GMC
- Foundation Schools
- MSC-Assessment Alliance
- BMA Medical Students Committee
- NHS Employers

- **Prescribing Safety Assessment Project Team** is responsible for delivering the key work streams
Structure
Prescribing Safety Assessment

Section 1: Prescribing

Section 2: Prescription Review

Section 3: Planning Management

Section 4: Providing Information

Section 5: Calculation Skills

Section 6: Adverse Drug Reactions

Section 7: Drug Monitoring

Section 8: Data Interpretation

8 sections – 60 items
TOTAL = 120 mins
(200 marks)

MED
SURG
ELD
PED
PSYCH
O&G
GP
Item bank
Item Bank and Test Development

• Aim to have around 3,000 items by April 2017

• Question item authors (around 100) already trained
  – Medical Schools – academic physicians
  – British Pharmacological Society – clinical pharmacologists
  – National Health Service – physicians and junior doctors
  – Clinical pharmacy - pharmacists

• Items submitted to PSA online system
100 item authors
- Consultants
- Junior doctors
- Pharmacists

Approved PSA item writers write draft assessment items using the 8 station type PSA templates in prescribingsafetyassessment.ac.uk

Editors conduct initial review of items, checking for completeness, face validity, relevance to station type etc. Entered into item log with appropriate metadata. Sent for peer review.

Peer review workshops to (i) conduct face validity and cover up test of scenario and correct answer, (ii) review and edit the item to remove any ambiguity and eliminate detractors in the answer options, and (iii) decide whether to refer the item for standard setting.

Standard setting sub-group provides pass mark - modified Angoff technique

Senior editor provides an assessment build based on new V3 items and existing V4 items

Assessment Board reviews and agrees items forming summative PSA event (V4 items).

Assessment Board monitors and maintains the bank in relation to current prescribing policy and practice, current relevance to the FY1 role, and balance of items across station type, domain, patient group and drug type.
Item development cycle

- Items commissioned from trained authors – Oct/Nov
- Peer review event over 2 days in Warwick – April
- PSA question papers constructed – September
- Assessment Board meeting – November
- Standard Setting meeting – January
- PSA events in medical schools – February to June
- PSA events in foundation schools – July and November
Delivery
Welcome to the Prescribing Safety Assessment

Prescribing Safety Assessment (PSA) events are scheduled to take place in all UK medical schools, some overseas schools, and in foundation schools.

Please follow the links below for more information about the background to and purpose of the PSA, how to prepare for a PSA assessment, what to expect on the day, and how to provide and receive feedback following the event.

About the PSA events  Preparing for the PSA event  During the assessment  Feedback  Information for event organisers  PSA Information Videos

Prescribing is one of the commonest tasks undertaken by Foundation doctors and, yet, is the one that many find to be the most challenging. The PSA is intended to be a valid and reliable assessment that allows final year medical students to demonstrate that they have the necessary knowledge, skills and judgement to begin their work as junior prescribers in NHS hospitals.

The PSA is blueprinted against the competencies expected of a medical graduate by the General Medical Council, which are identified in Outcomes for graduates in Tomorrow’s Doctors. These include being able to write new prescriptions, review existing prescriptions, calculate drug doses, provide appropriate information to patients and carers, identify and avoid both adverse drug reactions and medication errors and amend prescribing to suit individual patient circumstances.

The PSA Team has been working with stakeholders over the years with the aim of developing a prescribing assessment that is fair, valid, reliable, of high quality and reflects the work of a Foundation doctor. Pilot assessments have been run over recent years and have helped us to:

- Provide evidence of the validity and reliability of the PSA using psychometric analysis of performance data;
- Test the capacity of the PSA online delivery system;
- Identify the local capacity of medical schools to deliver a national online assessment;
- Gather feedback about the PSA from candidates and medical and foundation schools.

From 2016, all medical students are required to pass the PSA at their medical school. Those who do not will be required to take the PSA at their foundation induction week (including FP 2016 applicants). If this applies to you, more details will be provided to you by your foundation school.

We hope that, like the candidates who have previously participated in the PSA, you will find it to be an interesting and informative self-assessment of your current prescribing abilities and an opportunity to improve your future prescribing. You can use it to prepare for the F1 role. The clinical scenarios are similar to those that will be included in local assessments and simulate situations that you might encounter in your postgraduate career.

Before your PSA event please take the time to view the brief presentations prepared by Professor Simon Maxwell, PSA Medical Director. To view these presentations and conduct of the PSA and types of questions you will encounter please visit the PSA Information Videos page.

To access the interactive PSA Practice assessments, click on 'My Profile' on the top bar menu and then 'Practice assessments' or click on direct links:

- Practice paper A - basic level
- Practice paper B - basic level
- Practice paper C - advanced level
- Practice paper D - intermediate

If you would like more background information on the PSA, please visit Assessment Structure page.

https://prescribingssafetyassessment.ac.uk
Case presentation
A 62-year-old woman is admitted to hospital with a 3-day history of increasing breathlessness, wheeze and dry cough. PMH: COPD with several admissions for exacerbations. DH: Salbutamol inhaler 200 micrograms as required, tiotropium inhaler 18 micrograms daily, fluticasone propionate 250 micrograms with salmeterol 50 micrograms inhaler (Seretide 250 Accuhaler*) 12-hrly. Treatment with prednisolone 30 mg orally daily has already been started by the GP.

On examination
She appears distressed, and is centrally cyanosed and coughing. Temperature 37.1°C, HR 112/min, BP 116/72 mmHg, RR 30/min, O₂ sat 90% (94–99) breathing air. PEFR 120 L/min. She is using her accessory muscles to breathe. Auscultation of the chest reveals widespread wheezes bilaterally.

Investigations
Hb 146 g/L (115–155), WCC 9.8 x 10⁹/L (4.0–11.0). Na⁺ 140 mmol/L (137–144), K⁺ 4.2 mmol/L (3.5–4.9), U 7.2 mmol/L (2.5–7.0), Cr 85 μmol/L (60–110). CXR shows hyperinflated lungs.

Prescribing request
Please write a prescription for ONE drug that will provide rapid relief of her bronchospasm.
(Use the hospital ‘once-only medicines’ prescription chart provided)
Case presentation
A 55-year-old man is to be given a dose of 40 mg of furosemide by IV injection to treat acute left ventricular failure. Furosemide injection is available in ampoules containing 50 mg in 5 mL.

Calculation
What volume of furosemide injection should he be given?
(Write your answer in the box below)

Answer
5 mL
Progress of the PSA
PSA: Progress

• 2010-04  Paper-based pilots (8 schools/1,000 students)
• 2011-05  Online pilot (2 schools/200 students)
• 2011-09  Question item author training (60 authors)
• 2012-02  Annual peer-review event (bank – 600 items)
• 2012-04  Online pilot (8 schools/1,300 students)
• 2013-02  Annual peer-review event (bank – 1,200 items)
• 2013-05  Online pilot (29 schools/5,000 students)
• 2014-06  Annual peer-review event (bank – 1,500 items)
• 2014-06  PSA2014 (31 schools/8,000 students) plus 5 overseas schools, FY1
• 2015-03  Annual peer review event (bank – 1,850 items)
• 2015-06  PSA2015 (31 schools/8000 students, overseas, FY1, NES/HEE pharmacists
• 2016-02  PSA2016 (31 schools/8000 students, overseas, FY1, NES/HEE pharmacists
PSA 2015

- **7,576 students** from 31 UK medical schools
- 631 students in 6 overseas medical schools
- 8 sites used summatively
- 4 papers (A-D)

- Pass rate 91%
- Cronbach’s $\alpha$ 0.74 – 0.78
Feedback
This table shows your latest results. You can repeat the formative assessment as many times as you want improving your score.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>PWS</th>
<th>REV</th>
<th>MAN</th>
<th>COM</th>
<th>ADR</th>
<th>TDM</th>
<th>DAT</th>
<th>CAL</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice-PSA-Paper-A</td>
<td>7/40</td>
<td>0/16</td>
<td>4/8</td>
<td>0/6</td>
<td>4/8</td>
<td>4/8</td>
<td>2/6</td>
<td>0/8</td>
<td>21/100</td>
</tr>
</tbody>
</table>

**PWS** = Prescribing  
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**COM** = Communicating Information  
**ADR** = Adverse Drug Reaction  
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<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Medicine (Approved Name)</th>
<th>Dose</th>
<th>Route</th>
<th>Prescriber Signature</th>
<th>Time Given</th>
<th>Given By</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD/MM/YYYY</td>
<td>HH:MM</td>
<td></td>
<td></td>
<td></td>
<td>including surname</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14/03/2016</td>
<td>21:00</td>
<td>Terbutaline</td>
<td>5 micrograms</td>
<td>oral</td>
<td>smaxwell</td>
<td>Score: 1</td>
<td></td>
</tr>
</tbody>
</table>
Performance by medical school
### PSA2015: Student feedback

<table>
<thead>
<tr>
<th>Q1</th>
<th>This assessment was an appropriate test of the prescribing skills of a medical student upon graduation</th>
<th>3.46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2</td>
<td>My course prepared me for the content of the questions in this assessment</td>
<td>2.99</td>
</tr>
<tr>
<td>Q4</td>
<td>The time provided for answering the questions was sufficient</td>
<td>2.41</td>
</tr>
<tr>
<td>Q5</td>
<td>The layout and presentation of the questions was easy to follow</td>
<td>3.88</td>
</tr>
<tr>
<td>Q6</td>
<td>The online interface was easy to use</td>
<td>3.90</td>
</tr>
<tr>
<td>Q7</td>
<td>The information (available prior to the event on prescribing-safetyassessment.ac.uk) about the PSA was useful</td>
<td>3.90</td>
</tr>
<tr>
<td>Q8</td>
<td>The questions in the assessment were clear and unambiguous.</td>
<td>3.51</td>
</tr>
</tbody>
</table>

Strongly agree = 5, agree = 4, neutral = 3, disagree = 2, strongly disagree = 1
PSA2015: Student feedback

Q3. The number of prescriptions that I have written on a prescription chart during my training is

<table>
<thead>
<tr>
<th>Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 5</td>
<td>25%</td>
</tr>
<tr>
<td>6 – 10</td>
<td>19%</td>
</tr>
<tr>
<td>11 – 20</td>
<td>24%</td>
</tr>
<tr>
<td>21 – 50</td>
<td>23%</td>
</tr>
<tr>
<td>More than 50</td>
<td>9%</td>
</tr>
</tbody>
</table>
What has the PSA achieved?
What has the PSA achieved?

• Online assessment system
• 2000 question items
• 36,000 registrants
• 750 summative assessment events
• 400,000 prescriptions marked
• Nationally delivered online assessment
• Implemented a competency assessment for entry to clinical practice
Benefits arising for students

• Nationally summative assessment of prescribing that is fair and equally applied across medical schools (and hospitals)

• Formative education tool

• Stimulate better training experiences

• Raising and unifying standards

• Enhanced confidence

• Student enthusiasm
Benefits arising for NHS patients

• Junior doctors demonstrated to have achieved minimum competence in a high risk area of clinical practice

• More prescribing experience at point of graduation

• Greater awareness of safety issues

• Better able to counsel patients

• Better patient outcomes?
What does the future hold for the PSA?
PSA: the future

- Prescribing practice for students and trainees
- More authors and question items
- Other relevant groups
  - More senior doctors: consultants, trainees and GPs
  - New prescribing groups
    - pharmacy undergraduates
    - pharmacist and nurse prescribers
    - physicians assistants
  - International interest
    - New Zealand, Canada, Australia, India
- National entry requirement/national licensing
Summary
Summary

• Prescribing is a **key clinical skill** for all doctors

• There is evidence of **poor prescribing practice** amongst new graduates and others

• A **reliable and valid assessment of competence** is helpful for medical schools and the NHS, and serve to stimulate improved educational experiences for students

• The **Prescribing Safety Assessment** enables graduates to demonstrate that they have achieved a basic level of competence

• The **Prescribing Safety** Assessment is now fully implemented and Foundation schools expect all entrants to have passed it
Any questions?

https://prescribingsafetyassessment.ac.uk