

# Preparing for the Prescribing Safety Assessment

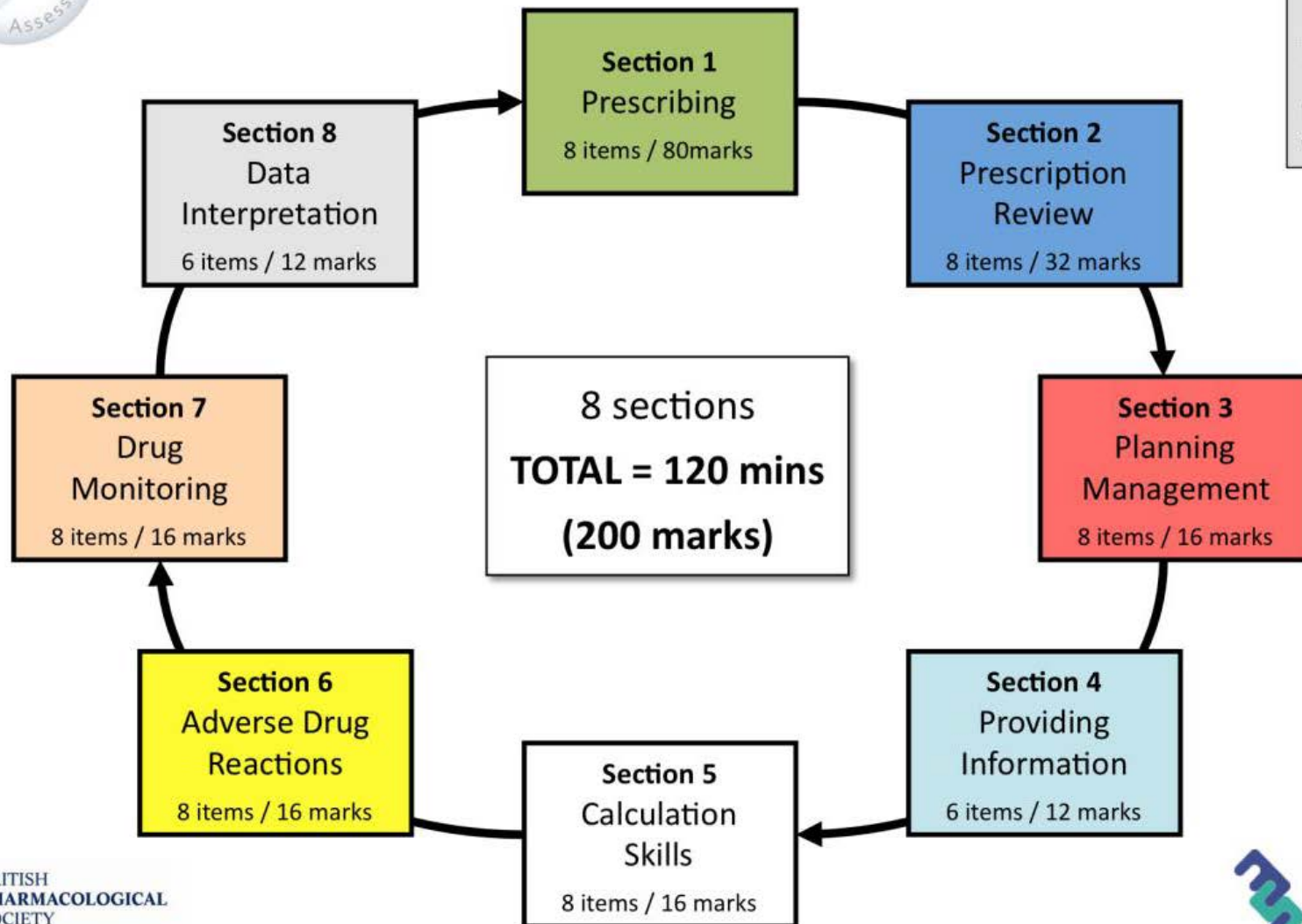
# PSA 2015

- 2 hour online exam
- BNF available (advise use NICE version)
- Range of questions (see next slide)
- Info available on website plus practice exams
  - must login and activate your account at least 24 hours before the exam
- Results and feedback will be available after the exam



# Prescribing Safety Assessment

MED  
SURG  
ELD  
PED  
PSYCH  
O&G  
GP



	Clinical setting (and No req to meet blueprint)								
Question style (and No of items in assessment)	Medicine (8)	Surgery (4)	Elderly care (8)	Pediatrics (4)	Psychiatry (4)	Obstetrics and Gynaecology (4)	General Practice (8)		Checklist for high risk drugs coverage
PWS (8 items)									Anticoagulation (AC)
REV (8 items)									Antibiotics (AB)
(min 60 prescribed items)									Insulin (INS)
MAN (8 items)									Opiates (OPI)
									Fluids (FLU)
COM (6 items)									
CAL (8 items)									
ADR (8 items)									
MON (8 items)									
DAT (6 items)									
	Insert item number in relevant box								

**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, O<sub>2</sub> 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 (115–165), WCC  $9.8 \times 10^9$ /L (4.0–11.0).  
Na<sup>+</sup> 140 mmol/L (137–144), K<sup>+</sup> 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)*

**ONCE ONLY MEDICINES**

Date DD/MM/YYYY	Time HH:MM	Medicine (Approved Name)	Dose	Route	Prescriber Signature	Time Given	Given By
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

next

Examples

# Case 1 - ADR

- A 22-year-old man presents to his GP complaining of increased shortness of breath and wheezing. **PMH**. He has suffered from asthma since early childhood. **DH**. He normally takes salbutamol, salmeterol and fluticasone.
- His GP prescribes a short course of oral prednisolone and amoxicillin for an infective exacerbation of asthma.
- Select the adverse effect that is *most likely* to be caused by the prednisolone.

# Case 1

1 = Osteoporosis

2 = Candidiasis

3 = Weight gain

4 = Easy bruising

5 = Hypokalaemia





## Case 2 - ADR

- A 17-year-old man presents to his GP complaining of an itchy rash. He attended A&E 3 days ago complaining of a painful infected finger following an injury. DH. Flucloxacillin 500 mg orally 6-hrly for 7 days and paracetamol 1g orally 6-hrly as required.
- The rash is thought to be drug-induced and he is advised to stop taking flucloxacillin.

## Case 2

- Select the most appropriate management for his rash
  1. Adrenaline 1:1000 IM 500micrograms stat
  2. Chlorphenamine 4mg orally four times a day
  3. Prednisolone 40mg orally daily
  4. 1% hydrocortisone cream topically four times a day
  5. Oxygen 24% by venturi mask

# Case 3 - Data

- A 72-year-old woman has her regular INR check. **PMH**. She has suffered from a pulmonary embolism 2 months ago. **DH**. She normally takes warfarin 3mg daily.
- Her INR is found to be 3.5.
- Select the *most appropriate* decision option with regard to the next dose of warfarin based on these data.

# Case 3

1 = Stop warfarin for 2 days and recheck INR

2 = Reduce dose to 2mg and recheck INR

3 = Leave at 3mg and recheck INR

4 = Increase dose to 4mg and recheck INR

5 = Increase dose to 5mg and recheck INR



# Case 4 – Management

- A 64-year-old man is seen for his regular diabetes review appointment. **PMH**. He has suffered from type 2 diabetes mellitus for 10 years and has diabetic nephropathy. He has atrial fibrillation. **DH**. He normally takes metformin, atorvastatin, ramipril, amlodipine and warfarin.
- His most recent bloods show: HbA1c 70, Na<sup>+</sup> 141 mmol/L (137–144), K<sup>+</sup> 4.4 mmol/L (3.5–4.9), U 13.7 mmol/L (2.5–7.0), Cr 210 μmol/L (60–110), eGFR 29.

# Case 4

- Select the prescription that is contraindicated.

1 = Amlodipine

2 = Atorvastatin

3 = **Metformin**

4 = Ramipril

5 = Warfarin



# Case 5 - Management

- A 28-year-old woman presents to the outpatient thyroid clinic complaining of weight loss, racing heart, nervousness and diarrhoea.
- On examination:
- HR 104/min and rhythm irregular. Proptosis, lid lag and a smooth goitre.
- Investigations:
- plasma thyroid-stimulating hormone  $<0.3$  mU/L (0.4–5.0)
- free T4 53.5 pmol/L (10.0–22.0)

# Case 5

- Select the most appropriate management option
  1. Carbimazole 20mg orally daily
  2. Levothyroxine 25 micrograms orally daily
  3. Liothyroxine 10 micrograms orally daily
  4. Prophylthiouracil 100mg orally twice a day
  5. Radioactive iodine



# Case 6 - TDM

- A 75-year-old woman presents to the Acute medical admissions ward complaining of palpitations and shortness of breath. **PMH**. She has suffered from angina in the past. **DH**. She normally takes clopidogrel and isosorbide mononitrate. A diagnosis of atrial fibrillation is made and she is started on metoprolol.
- Select the most appropriate monitoring options to assess the beneficial effects of this treatment.

# Case 6

1. Blood pressure
2. Echocardiogram
3. Plasma metoprolol level
4. Symptoms
5. Troponin I level



# Case 7 - Communication

- A 34-year-old woman presents to the medical assessment unit with a painful, swollen right leg. A DVT is diagnosed. Dalteparin sodium 6000 units twice daily is recommended for the remainder of the pregnancy. She is worried about the safety of this treatment.

# Case 7

- Select the most important item of information she should be given
  1. Factor Xa levels will be monitored whilst on the treatment
  2. Her clotting profile will be monitored whilst on the treatment
  3. Low molecular weight heparin does not cross the placenta
  4. Low molecular weight heparin is given at lower doses in pregnancy
  5. She should expect minor vaginal bleeding whilst on the treatment

# Case 8 – Review

- An 81 year old woman presents feeling generally unwell, lethargic and nauseated.
- Past medical history includes hypertension, atrial fibrillation and TIA.
- Her blood results were: Na<sup>+</sup> 121 mmol/L (137–144), K<sup>+</sup> 3.4 mmol/L (3.5–4.9), U 17.7 mmol/L (2.5–7.0), Cr 203 μmol/L (60–110), eGFR 27.
- Select the two medications which are the most likely cause of the hyponatraemia

# Case 8

1. Indapamide 2.5 mg orally daily
2. Perindopril 4 mg orally daily
3. Rivaroxaban 20 mg orally twice a day
4. Amlodipine 10 mg orally daily
5. Citalopram 10 mg orally daily
6. Simvastatin 40 mg orally daily
7. Paracetamol 1 g orally four times a day

# Case 8

- Identify the two medications which have serious dosage errors
  1. Indapamide 2.5 mg orally daily
  2. Perindopril 4 mg orally daily
  3. Rivaroxaban 20 mg orally twice a day
  4. Amlodipine 10 mg orally daily
  5. Citalopram 10 mg orally daily
  6. Simvastatin 40 mg orally daily
  7. Paracetamol 1 g orally four times a day

# Case 9 - PWS

- A 32-year-old woman presents to the Accident and Emergency department complaining of acute onset breathlessness and pleuritic right sided chest pain. **PMH.** She has no past medical history. **DH.** She normally takes Microgynon 30. **SH.** She is a smoker.
- **On examination:** O<sub>2</sub> sat 93% on air, BP 121/76 mmHg, HR 110/min and regular, HS normal, RR 26/min, chest sounds clear. She weighs 96 kg.
- **Investigations:** ECG shows sinus tachycardia. CXR shows normal lung fields.
- A diagnosis of pulmonary embolism is suspected.



# Case 9

- Write a prescription for ONE drug that will help to treat a pulmonary embolism.

Drug	Dose	Route

# Case 9

- Dalteparin
- BNF says: Treatment of deep-vein thrombosis and of pulmonary embolism, by subcutaneous injection, as a single daily dose, adult body-weight under 46 kg, 7500 units daily; body-weight 46–56 kg, 10 000 units daily; body-weight 57–68 kg, 12 500 units daily; body-weight 69–82 kg, 15 000 units daily; body-weight 83 kg and over, 18 000 units daily, with oral anticoagulant treatment until adequate oral anticoagulation established; monitoring of anti-Factor Xa not usually required; for patients at increased risk of haemorrhage, see below

# Case 9

Drug	Dose	Route
Dalteparin	18000 units	S/C

# Case 10 - PWS

- A 54-year-old woman presents to the Accident and Emergency department complaining of severe acute abdominal pain.
- **On examination:** O<sub>2</sub> sat 97% on air, BP 154/88 mmHg, HR 90/min and regular, HS normal, RR 22/min, chest sounds normal, abdomen generally tender with guarding.
- **Investigations:** Hb 145 g/l, WCC 13.1 x 10<sup>9</sup>/l. ECG shows sinus tachycardia. CXR shows air under the diaphragm but no focal abnormality.
- You are asked to prescribe analgesia whilst waiting for a surgical review.

# Case 10

- Write a prescription for ONE drug that will help to alleviate her pain.

Drug	Dose	Route

# Case 10

- Drug options
  - Strong opiate
  - Weak opiate
  - Paracetamol
  - Adjunct analgesia
- Route options
  - Oral
  - S/C or IM
  - IV

# Case 10

- Route/dose options
- For morphine, BNF says: Acute pain, by subcutaneous injection (not suitable for oedematous patients) *or* by intramuscular injection, initially 10 mg (elderly or frail 5 mg) every 4 hours (or more frequently during titration), adjusted according to response;
- By slow intravenous injection, initially 5 mg (reduce dose in elderly or frail) every 4 hours (or more frequently during titration), adjusted according to response.

# Case 10

Drug	Dose	Route
Morphine	5mg	IV



# Calculations

- Metric – Weights
  - 1000 nanograms = 1 microgram
  - 1000 micrograms = 1 milligram
  - 1000 milligrams = 1 gram
  - 1000 grams = 1 kilogram
  - % w/v (weight/volume) = grams in 100 millilitres e.g. 5% w/v = 5 grams dissolved in 100 millilitres
- Metric – Volumes
  - 1000 millilitres = 1 litre
  - % v/v (volume/volume) = millilitres in 100 millilitres e.g. 30% v/v = 30 millilitres dissolved in 100 millilitres
  - 1 in 1000 = 1 gram in 1000 millilitres e.g. adrenaline 1:10,000 = 100 milligrams/millilitre (10 millilitres)

# Calculations

- How many mg of Lidocaine is in 5ml of a Lidocaine 2% solution?

Answer

2% solution means there is 2g of Lidocaine in 100ml

Therefore,  $1\text{ml} = 2\text{g}/100 = 0.02\text{g}$

So,  $5\text{ml} = 0.1\text{g}$

# Calculations

- A 500ml bag of Sodium Chloride Solution (0.9%) is given to a patient. How much sodium will be given?

Answer

0.9% sodium chloride means that there is 0.9g in 100ml (or 9g in 1000ml).

Therefore, 500ml contains 4.5g sodium.

# Calculations

- A patient with a non-ST elevation MI is going for coronary angiography. The cardiologist has asked for an infusion of Abciximab (ReoPro). The bolus dose has been given. Calculate the dose needed (125 nanograms/kg/minute). The patient weighs 78kg.

A patient with a non-ST elevation MI is going for coronary angiography. The cardiologist has asked for an infusion of Abciximab (ReoPro). The bolus dose has been given. Calculate the dose needed (125 nanograms/kg/minute). The patient weighs 78kg.

Dose =  $78 \times 125$  nanograms = 9750 nanograms = 9.75mcg per minute or 585mcg per hour