SPE1 Feedback session

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User notes

- This is a formative exam
- **Please do not share outside of your cohort**
  - This will lessen the use for future years

If not sure about something based on the feedback or anything else PSA related, feel free to email me at v.Kapil@qmul.ac.uk with your query and if we can't figure out by email, we can Teams

User notes

- Please use this for your learning around the topics and familiarising yourself with the BNF(s)

- The PWS questions are hand-marked
- Any truly disputable questions/answers will not have made it into a final PSA exam
- PWS (10-point prescribing) mark schemes potentially will vary in the real exam, but this is a reasonable indicative guide

- There is no reasonable way to reproduce the full “look” of the PSA exam with the Rogo/SPE system

Summary statistics

- Internal Anghoff method pass mark **67%**
  - Fail (<67%)
  - Borderline pass (67-70%)
  - Good pass (≥71%)

  - As a rule of thumb, you should do the PWS and REV questions with at least half your overall time left
  - If you think you will spend too long on a calculation, I suggest you move on first
  - Be familiar with the BNF
  - Work through any screenshots I have provided

Where next?

- Plenty of time to improve, regardless of current ***mock*** score
  - Practice materials in exam conditions (timed where possible)
  - Familiarise self with online BNFs (not just the app – it is different)
  - Suggest you work on the high scoring (10 marks) prescribing questions first
  - Please contact me (v.kapil@qmul.ac.uk) or Dr McGettigan (p.mcgettigan@qmul.ac.uk) lead for CPT in MBBS, lead for PSA sessions) if want to discuss further

Prescribing Item

ID	PWS101

This question item is worth **10 marks**

You may use the BNF at any time

Case presentation
A 86-year-old man presents to the medical assessment unit complaining of shortness of breath at rest that has worsened over the past month. **PMH**. Ischaemic heart disease and hypertension. **DH.** Ramipril 10 mg orally daily, bisoprolol 5 mg orally daily, isosorbide mononitrate 60 mg orally daily, simvastatin 40 mg orally nightly, and aspirin 75 mg orally daily.

On examination
HR 105/min and regular, BP 110/70 mmHg, JVP elevated at 6 cm, RR 30/min, O_2 sat 93% on air. Examination of the chest reveals dullness to percussion both bases and fine inspiratory crackles in both lower zones. Bilateral swollen legs with pitting oedema to knees.

Investigations
Na^+ 141 mmol/L (137–144), K^+ 4.2 mmol/L (3.5–4.9), U 7.0 mmol/L (2.5–7.0), Cr 100 µmol/L (60–110).

An intravenous infusion of GTN and supplementary oxygen have been initiated.

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

ONCE ONLY MEDICINES

Date	Time	Medicine (Approved name)	Dose	Route	Prescriber – sign + print	Time given	Given by

Prescribing Item | *Answer Page* | ID PWS101 | This question item is worth **10 marks** | You may use the BNF at any time BNF

	A. Drug choice	Score	Feedback/justification		B. Dose and route	Score	Feedback/justification
1	Furosemide	5	This is a powerful loop diuretic and is one of the drugs most likely to achieve a significant diuresis.		40–120 mg IV	5	This dose and route would be likely to achieve a significant diuresis (doses > 50 mg should be given by slow IV infusion)
2					<40 mg IV	2	This dose may produce a suboptimal diuresis
3					>120 mg IV	2	This is an unnecessarily high dose of furosemide that risks causing adverse effects in a diuretic naïve patient
4					20 mg oral	1	This dose is unlikely to be effective
5					40–120 mg oral	2	Any oral route will be less effective than IV
6					>120 mg oral	1	This dose is excessive and the route would be less likely to achieve a significant diuresis
7	Bumetanide	5	Loop diuretic. Not as commonly used in intravenous form as furosemide		1–3 mg IV	5	This dose and route would be likely to achieve a significant diuresis
8					<1 mg IV	2	This dose runs a significant danger of producing a suboptimal diuresis
9					>3 mg IV	2	This is an unnecessarily high dose of bumetanide that risks causing adverse effects in a diuretic naïve patient
10					1-2 mg oral	2	Any oral route will be less effective than IV
11					oral dose outside this range	1	This dose and route are inappropriate
12	Torasemide	2	This is a powerful loop diuretic but is available only via the oral route		5 – 40 mg oral	2	This is the correct dose of torasemide but a parenteral loop diuretic should have been chosen
13	Any thiazide diuretic	1	This is a thiazide diuretic, which will not have sufficient efficacy to achieve a significant diuresis		Correct dose and route	1	This is the correct dose but a parenteral loop diuretic should have been chosen
14	Any other diuretic	0	This kind of diuretic will not have sufficient efficacy to achieve a significant diuresis				
15	Nitrates	0	The patient is already being given a nitrate				
16	Morphine/diamorphine	1	May redistribute fluid but will not improve fluid overload		2.5–10 mg/2.5–5 mg IV	1	Higher doses would be hazardous (0 marks)

Marking guide for A and B. Candidates should be given **5 marks** for an optimal answer that can't be improved. They should get **3 marks** for an answer that is good but is suboptimal on some grounds (e.g. cost-effectiveness, likely adherence). They should get **2 marks** for an answer that is likely to provide benefit but is clearly suboptimal for more than one reason. They should get **1 mark** for an answer that has some justification and deserves some credit.

Acute heart failure

- Need to be familiar with diuretics in context of
  - Acute vs Chronic
    - Loop diuretics (e.g. furosemide) are the option of choice in **acute** heart failure
      - Dose typically 40-80mg, but sometimes can be higher
    - A small minority chose a thiazide-like diuretic
      - This will not be rapid-acting (esp as it would be given orally)
    - A small minority chose spironolactone
      - This is for chronic heart failure with reduced ejection fraction
  - IV vs oral loop diuretic
    - IV route is option of choice in **acute** heart failure
    - Lots chose oral diuretics
      - IV has quicker onset
    - A smaller minority chose intramuscular furosemide
      - Furosemide is rarely/never given I/M and is inappropriate route

Prescribing Item

ID PWS203

This question item is worth **10 marks**

You may use the BNF at any time

Case presentation

A 13-year-old boy is assessed on the paediatric day unit for severe aural pain that has not improved despite 72 hours of treatment with simple analgesia. **PMH.** None. **DH.** Paracetamol 1 g orally as required. Allergic to penicillin.

On examination

T 37.7 °C; HR 100/min; BP 100/68 mmHg. Otoscopy reveals intact red drum, bulging on right side. He weighs 50kg

Prescribing request

Write a prescription for ONE drug that will treat his infection.
(use the hospital 'regular medicines' prescription chart provided)

		Date					
		Time					
Drug (Approved name)		6					
Dose	Route	8					
		12					
Prescriber – sign + print	Start date	14					
		18					
Notes	Pharmacy	22					

Prescribing Item | ***Answer Page*** | **ID** PWS203 | This item is worth **10 marks** | You may use the BNF at any time

	A. Drug choice	Score	Feedback/justification		B. Dose and Posology	Score	Feedback/justification
1	Clarithromycin	5	BNF recommended 1st line for penicillin allergy		250 mg 12-hrly orally	5	Recommended dose/posology
2					500mg 12-hrly orally	3	Usually reserved for severe infections
3					500mg 12-hrly iv	1	Parenteral reserved for serious or systemic upset
4					Any other dose/timing/route	0	
5	Other macrolide (erythromycin, azithromycin)	5	Acceptable as first line in penicillin allergy in newer versions of BNF		Erythromycin 250mg 6-hrly orally Erithromycin 500mg orally twice daily	5	Recommended dose/posology
6					Erythromycin 500mg 6-hrly orally or 1000mg twice daily	3	Usually reserved for severe infections
7					Any IV dose	1	Parenteral reserved for serious or systemic upset
8	Beta lactam antibiotic	0	POTENTIALLY LIFE-THREATENING		Any dose of beta-lactam	0	POTENTIALLY LIFE-THREATENING

Marking guide for A and B. Candidates should be given **5 marks** for an optimal answer that can't be improved. They should get **3 marks** for an answer that is good but is suboptimal on some grounds (e.g. cost-effectiveness, likely adherence). They should get **2 marks** for an answer that is likely to provide benefit but is clearly suboptimal for more than one reason. They should get **1 mark** for an answer that has some justification and deserves some credit.

Antibiotics

- Be familiar with how to look up empirical antibiotic therapy on BNFs
  - Two options shown in following slides

- **Principles**
  - Check pregnancy status and allergies for contraindications
    - 80% chose an oral macrolide
    - **Check allergies!**
    - Check renal function (sometimes age, weight, liver function) for possible dose adjustment
  - Decide on the infection you are aiming to treat
  - Decide on "severity" of infection for correct dose and IV/PO
  - Check other patient details for route
    - E.g. unable to swallow, poor absorption → likely IV route
    - Whenever possible, painful IM injections should be avoided in children
  - Based on sensitivities if possible

NICE National Institute for Health and Care Excellence

otitis media

Guidance | Standards and indicators | Life sciences | British National Formulary (BNF) | British N for Child

BNF Drugs Interactions Treatment summaries What's changed? Abou

Read about our approach to COVID-19

NICE > BNF > Search results for otitis media

BNF search result

Showing 1 to 10 of 23 results for ot

Ear | Treatment summary

Otitis externa Otitis externa refers to inflammatic some cases may involve oedema. It...

Ear infections, antibacterial therapy | Trea

Otitis externa Otitis externa is inflammation of th triggered by a bacterial infection...

Otitis media

Acute otitis media is inflammation in the middle ear associated with effusion and accompanied by an ear infection. Acute otitis media is commonly seen in children and is generally caused by viruses (respiratory sy influenza virus, and parainfluenza virus) or ba *Streptococcus pneumoniae*, *Streptococcus p* virus and bacteria often co-exist. For further i

Choice of antibacterial the

No penicillin allergy

- *First line*: amoxicillin.
- *Second line* (worsening symptoms despite amoxiclav.

Penicillin allergy or intolerance

- *First line*: clarithromycin or erythromycin (ir
- *Second line* (worsening symptoms despite consult local microbiologist.

Email - Vikas Kapil - Outlook | New Tab | Clarithromycin | Drugs | BNF

bnf.nice.org.uk/drugs/clarithromycin/

Navigate to section

otitis media

Acute otitis media

By mouth using immediate-release medicines

Child 1 month–11 years (body-weight up to 8 kg)
7.5 mg/kg twice daily for 5–7 days.

Child 1 month–11 years (body-weight 8–11 kg)
62.5 mg twice daily for 5–7 days.

Child 1 month–11 years (body-weight 12–19 kg)
125 mg twice daily for 5–7 days.

Child 1 month–11 years (body-weight 20–29 kg)
187.5 mg twice daily for 5–7 days.

Child 1 month–11 years (body-weight 30–40 kg)
250 mg twice daily for 5–7 days.

Child 12–17 years
250–500 mg twice daily for 5–7 days.

Adult
250 mg twice daily usually for 7–14 days, increased to 500 mg twice daily, if required in severe infections.

Prescribing Item

ID PWS302

This item is worth **10 marks**

You may use the BNF at any time

Case presentation
A 40-year-old man was brought to the Emergency Department after a bystander found him with reduced consciousness. He was found to be hypoglycaemic by the paramedics and has received glucagon 1 mg intramuscularly 10 minutes ago.

On examination
Temperature 37.1°C, HR 110/min and regular, BP 121/73 mmHg, O_2 sat 99% on 15L oxygen. GCS 6/15. Appears cachectic.

Investigations
Capillary blood glucose 2.1 mmol/L, ECG sinus rhythm, CXR clear lung fields.

Prescribing request
Write a prescription for ONE intravenous fluid that would be most appropriate for the patient at this point.
(use the hospital fluid prescription chart provided)

INFUSION THERAPY

Date	Start time	Infusion solution					Medicine added		Prescriber's signature	Given by
		Type/strength	Volume	Route	Rate	Duration	Approved name	Dose		

Prescribing Item | *Answer Page* | ID PWS302 | This item is worth **10 marks** | You may use the BNF at any time

	A. Drug choice	Score	Feedback/justification		B. Dose and Posology	Score	Feedback/justification
1	Glucose 10%	5	BNF recommended 1st line fluid		150mL-200mL over 15min	5	Recommended dose/posology (15-20g)
2					>200ml IV	2-3	Increased risk of phlebitis
3					<150mL IV	1	May not be effective
4					Any >15 minutes –2 marks		
5	Glucose 20%	4	BNF 1st line (equal) for unconsciousness		75mL-100mL over 15min	5	15-20g
6					Rest of mark scheme similar to above		
7	Glucose 50%	1	More likely phlebitis		30-40mL over 15min or less	1	15-20g
8					Rest of mark scheme similar to above		
9	Glucose 5% or Dextrosaline	0	Unlikely to be very effective		Any dose of 5% dextrose or dextrosaline	0	May increase CBG a tiny amount
10	Any other fluid	0	POTENTIALLY LIFE-THREATENING		Any other fluid volume	0	POTENTIALLY LIFE-THREATENING

Marking guide for A and B. Candidates should be given **5 marks** for an optimal answer that can't be improved. They should get **3 marks** for an answer that is good but is suboptimal on some grounds (e.g. cost-effectiveness, likely adherence). They should get **2 marks** for an answer that is likely to provide benefit but is clearly suboptimal for more than one reason. They should get **1 mark** for an answer that has some justification and deserves some credit.

Hypoglycaemia

- NOTE: This is **not** a typical fluids prescription question for the PSA, but is important learning topic
- Hypoglycaemia management
  - Alert
    - Glucose 15-20 g orally in liquid form followed by sustained carbohydrate
  - Reduced consciousness
    - Glucagon (1mg subcutaneously or intramuscularly)
    - Alternatively (or if no response to glucagon), 10% glucose intravenously to give 15-20g over 15 min
  - Unconscious
    - Glucagon (1mg subcutaneously or intramuscularly)
    - Alternatively (or if no response to glucagon), 10 or 20% glucose intravenously to give 15-20g over 15 min

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In an emergency, if the patient has a
hypoglycaemia, intramuscular glucag
has been shown how to use it. If gluc
10% intravenous infusion should be gi

Hypoglycaemia which causes **uncons**
unconscious, having seizures, or who
insulin stopped, and be treated initiall
there is no response after 10 minutes,
alternatively glucose 20% intravenous
intravenous infusion is not recommen
extravasation injury, and is viscous, m

Hypoglycaemia

By mouth

Child up to 5 years
5 g, repeated after 15 minutes if necessary, 5 g is available from 20 mL oral glucose liquid, 1.5 glucose tablets, or half a tube of glucose 40% oral gel. If oral glucose formulations are not available, the dose may be given using another fast-acting carbohydrate; 5 g is available from approximately 1 teaspoonful of sugar dissolved in an appropriate volume of water.

Child 5–11 years
10 g, repeated after 15 minutes if necessary, 10 g is available from 40 mL oral glucose liquid, 3 glucose tablets, or 1 tube of glucose 40% oral gel. If oral glucose formulations are not available, the dose may be given using another fast-acting carbohydrate; 10 g is available from approximately 2 teaspoonfuls of sugar dissolved in an appropriate volume of water.

Child 12–17 years
15 g, repeated after 15 minutes if necessary, 15 g is available from 60 mL oral glucose liquid, 4 glucose tablets, or 1.5 tubes of glucose 40% oral gel. If oral glucose formulations are not available, the dose may be given using another fast-acting carbohydrate; 15 g is available from approximately 3 teaspoonfuls of sugar dissolved in an appropriate volume of water.

Adult
15–20 g, repeated after 15 minutes if necessary, 15–20 g is available from 60–80 mL oral glucose liquid, 4–5 glucose tablets, or 1.5–2 tubes of glucose 40% oral gel. If oral glucose formulations are not available, the dose may be given using another fast-acting carbohydrate; 15–20 g is available from approximately 3–4 teaspoonfuls of sugar dissolved in an appropriate volume of water, or 150–200 mL of pure fruit juice.

By intravenous infusion

Child
500 mg/kg, to be administered as Glucose 10% intravenous infusion into a large vein through a large-gauge needle; care is required since this concentration is irritant.

Adult
15–20 g, to be administered over 15 minutes as Glucose 10% or 20% intravenous infusion into a large vein

Hypoglycaemia

- Example correct answers below:
  150-200mL 10% glucose

		INFUSION THERAPY								
Date	Start time	Infusion solution					Medicine added		Prescriber's signature	Given by
		Type/strength	Volume	Route	Rate	Duration	Approved name	Dose		
21/9	16:00	Glucose 10%	150ml	IV		15 min			VK	

Hypoglycaemia

- Common errors:

  Using non-glucose based fluids

  ?not recognising the hypoglycaemic episode

  50% glucose too concentrated

  risk of extravasation injury

  Choosing a time >15min

  Being an emergency, it should be given relatively fast (over 15min)

Hypoglycaemia

- Example of other common errors:

		INFUSION THERAPY								
Date	Start time	Infusion solution					Medicine added		Prescriber's signature	Given by
		Type/strength	Volume	Route	Rate	Duration	Approved name	Dose		
21/9	16:00	Sodium chloride 0.9%	500 ml	IV		15min	Glucose 15g		VK	

- Glucose is not an added drug, it is a fluid of it's own

Hypoglycaemia

- Example of other common errors:

		INFUSION THERAPY								
Date	Start time	Infusion solution					Medicine added		Prescriber's signature	Given by
		Type/strength	Volume	Route	Rate	Duration	Approved name	Dose		
21/11	16:00	Glucose 10%	15g	IV		15			VK	

- Although the final content is 15g, it should be prescribed as a volume (75ml in this case to give 15g glucose)

Prescribing Item

ID PWS405

This item is worth **10 marks**

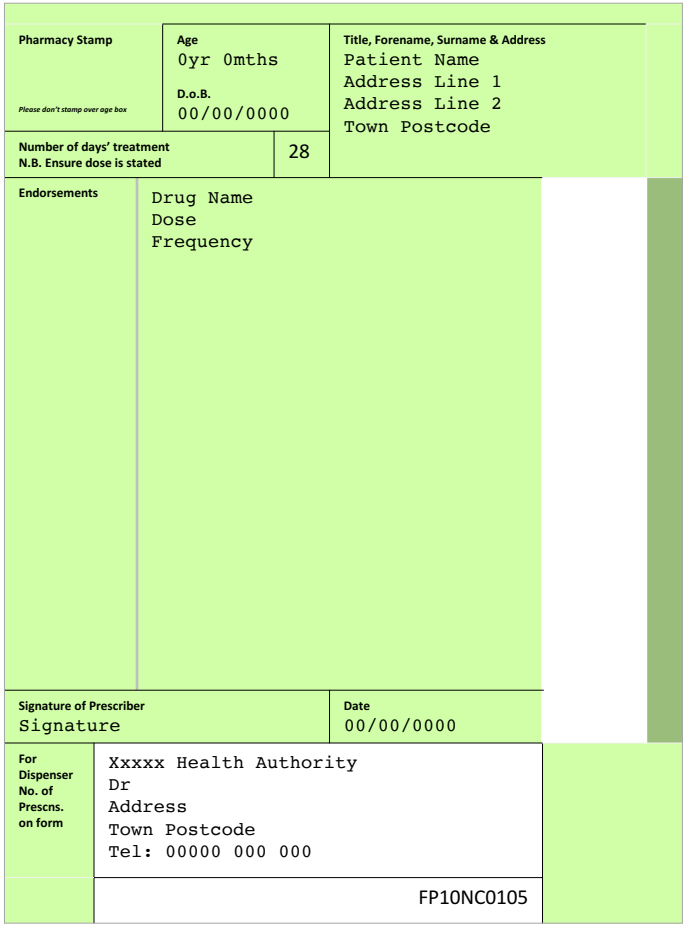
You may use the BNF at any time

Case presentation
A 68-year-old woman attends her GP after a recent manipulation under anaesthetic for a left Colles' fracture. **PMH**. Recent diagnosis of osteoporosis. **DH.** Calcichew D3 Forte two tablets orally daily.

On examination
Left forearm in plaster cast.

Investigations
DEXA scan confirms osteoporosis.

Prescribing request
Write a prescription for ONE drug will help reduce the risk of further fractures.
(use the general practice prescription form provided)



Prescribing Item | *Answer Page* | ID PWS405 | This item is worth **10 marks** | You may use the BNF at any time

	A. Drug choice	Score	Feedback/justification		B. Dose and Posology	Score	Feedback/justification
1	Alendronic Acid	5	BNF recommended 1st line for post menopausal, secondary prevention of osteoporotic fractures		70mg ORAL once-weekly or	5	Recommended dose
					10mg once-daily	3	Recommended dose but not ideal for patient
					10mg ORAL once-weeky	1	Too low
					70mg ORAL daily	0	Danger of toxicity
					Other doses	0	(not readily available)
2	Risedronate	5	Now joint 1st line for post menopausal, secondary prevention of osteoporotic fractures		ORAL 35mg weekly	5	Recommended dose
					5mg ORAL daily	3	Recommended dose but not ideal for patient
					5mg ORAL weekly	1	Too low
					35mg ORAL daily	0	Danger of toxicity
					Other doses	0	(not readily available)
3	Strontium ranelate Raloxifene	2	3rd line for post menopausal, secondary prevention of osteoporotic fractures		Strontium (ORAL 2g daily), raloxifene (ORAL 60mg daily)	2	Correct doses (any other dose = 0 marks as not readily available)
4	Teriparatide	1	4th line for post menopausal, secondary prevention of osteoporotic fractures		20 micrograms SC daily	1	
5	Other bisphosphonates	2	Not recommended for osteoporosis orally		Correct dose of other bisphosphonates	2	
6	HRT Calcitriol	1	Recommended for corticosteroid induced osteoporosis as 2nd line to bisphosphonates		Correct dose of HRT/calcitriol	1	

Marking guide for A and B. Candidates should be given **5 marks** for an optimal answer that can't be improved. They should get **3 marks** for an answer that is good but is suboptimal on some grounds (e.g. cost-effectiveness, likely adherence). They should get **2 marks** for an answer that is likely to provide benefit but is clearly suboptimal for more than one reason. They should get **1 mark** for an answer that has some justification and deserves some credit.

PWS general lesson

- Prescribe what you commonly see prescribed!

- Alendronic acid
  - Although 10mg daily and 70mg weekly are BOTH licenced,
  - Commonly accepted that 70mg weekly is more convenient for patients

- Not using second-line drugs unless good reason

Prescription Review Item | ID REV005 | This item is worth **4 marks** | You may use the BNF at any time

Case presentation
A 53-year-old woman is admitted to hospital with a non-infective exacerbation of her chronic obstructive pulmonary disease. **PMH.** Alcohol dependence (up to 60 units/day), atrial fibrillation, chronic obstructive pulmonary disease, rheumatoid arthritis, type II diabetes. **DH.** In addition apixaban 5 mg orally 12hrly, her medications are listed right.

Question A
Select the TWO prescriptions that are least likely be efficacious at the current prescribed dose.
(*mark them with a tick in column A*)

Question B
Select the ONE prescriptions that should not be prescribed together with her apixaban
(*mark them with a tick in column B*)

CURRENT PRESCRIPTIONS

Drug name	Dose	Route	Freq.	A	B
Azathioprine	100 mg	ORAL	Daily	☐	☐
Chlordiazepoxide	10 mg	ORAL	Daily	X	☐
Dalteparin	5000 units	S.C.	Daily	☐	X
Ipratropium bromide	250 micrograms	NEBS	6-hrly	☐	☐
Metformin MR	1 gram	ORAL	Twice daily	☐	☐
Prednisolone	40 mg	ORAL	Daily	☐	☐
Salbutamol	200 micrograms	NEBS	6-hrly	X	☐
Symbicort® 100/6	Two puffs	INH.	12-hrly	☐	☐

Answer box

Question A Marks per correct tick 1

Chlordiazepoxide at 10mg orally daily is unlikely to be sufficient for the degree of alcohol dependence.
Salbutamol nebulisers are typically prescribed at 2.5mg (or occasionally 5mg) for each nebulizer – whereas the 200micrograms dose is typical for inhalers

Question B Marks per correct tick 2

LWMH for DVT prophylaxis should not be used together with anticoagulation (be it DOAC or warfarin)

Prescription Review Item | ID REV006 | This item is worth **4 marks** | You may use the BNF at any time

Case presentation
A 63-year-old man returns to his General Practitioner to review his medications prior to a repeat prescription. **PMH.** Gout, *H. pylori*-associated gastritis three months ago, ischaemic heart disease, Type II diabetes mellitus. **DH.** Listed on table.

Question A
Select the THREE prescriptions that should be prescribed for a short duration.
(*mark them with a tick in column A*)

Question B
Select the ONE prescription that has a dosing error.
(*mark it with a tick in column B*)

CURRENT PRESCRIPTIONS

Drug name	Dose	Route	Freq.	A	B
Allopurinol	200 mg	ORAL	daily	☐	☐
Amoxicillin	1 g	ORAL	12-hrly	x	☐
Aspirin	75 mg	ORAL	daily	☐	☐
Bisoprolol	10 mg	ORAL	daily	☐	☐
Clarithromycin	500 mg	ORAL	12-hrly	x	☐
Gliclazide	4 mg	ORAL	12-hrly	☐	x
Metformin M/R	2 g	ORAL	evening	☐	☐
Omeprazole	20 mg	ORAL	12-hrly	x	☐
Ramipril	10 mg	ORAL	daily	☐	☐

Answer box

Question A	Marks per correct tick	1
H. Pylori eradication therapy should be reviewed to consider whether it is appropriate to stop		
Question B	Marks per correct tick	2
Gliclazide 4mg 12-hrly is typically a sub-therapeutic dose, and usually prescribed between 40mg and 160mg		

Prescription Review Item | ID REV007 | This item is worth **4 marks** | You may use the BNF at any time

Case presentation
A 66-year-old man attends his annual diabetic review. He has been well and asymptomatic since his last review.

PMH. Type II diabetes mellitus, gout, hypercholestrolaemia, hypertension.
He provides a hand-written list of medications he believe he is taking (see right).

Question A
Select the TWO prescriptions that is *most likely* contribute to hypoglycaemia.
(*mark them with a tick in column A*)

Question B
Select the ONE prescription that has a dosing error.
(*mark it with a tick in column B*)

CURRENT PRESCRIPTIONS

Drug name	Dose	Route	Freq.	A	B
Allopurinol	100 mg	ORAL	Daily	☐	☐
Amlodipine	10 mg	ORAL	Daily	☐	☐
Bezafibrate	400 mg	ORAL	At night	☐	☐
Canagliflozin	200 mg	ORAL	Daily	X	
Glimepride	1 mg	ORAL	Daily	X	☐
Metformin	1 mg	ORAL	Lunch and evening meal	☐	X
Pioglitazone	45 mg	ORAL	Daily	☐	☐
Simvastatin	40 mg	ORAL	At night	☐	☐
Spironolactone	25 mg	ORAL	Daily	☐	☐

Answer box

Question A Marks per correct tick 1

Insulin, sulfonylureas and SGLT2 inhibitors all carry a risk of hypoglycaemia
Thiazolidinediones (pioglitazone) also carries this risk, but is lower than the other two listed here.

Question B Marks per correct tick 2

Metformin is prescribed between 500mg and 2g

Prescription Review Item | ID REV008 | This question item is worth **4 marks** | You may use the BNF at any time

Case presentation

A 79-year-old woman presents to the emergency room after a fall. X-ray of her left hip confirms a fractured neck of femur. On examination you notice she has broken skin from scratch marks along both her arms (which appear quite thin compared to the rest of her rotund body). Even her face appears round. When asked why she fell, she tells you she felt dizzy two hours after taking her tablets. **PMH**. Hypertension, type 2 diabetes mellitus, giant cell arteritis. **DH.** Her current regular medicines are listed (right).

Investigations

Full blood count normal, U+E normal, capillary blood glucose 6.2 mmol/L.

Question A

Select the *TWO* medications that raised her likelihood of fracture.
(*mark it with a tick in column A*)

Question B

Select the *TWO* medications that are *most likely* to be contributing to the dizzy feeling which led to her fall.
(*mark it with a tick in column B*)

CURRENT PRESCRIPTIONS

Drug name	Dose	Route	Freq.	A	B
Aspirin	75 mg	ORAL	Daily	☐	☐
Empagliflozin	10 mg	ORAL	Daily		x
Gaviscon	10 ml	ORAL	PRN	☐	☐
Metformin	500 mg	ORAL	12-hrly	☐	☐
Omeprazole	40 mg	ORAL	Daily	x	
Prednisolone	15 mg	ORAL	Daily	x	☐
Ramipril	10 mg	ORAL	Daily	☐	x
Senna	15 mg	ORAL	Nightly	☐	☐
Simvastatin	20 mg	ORAL	Daily	☐	☐

Answer box

Question A Marks per correct tick [1]

Prednisolone in this dose is common for those with giant cell arteritis. However, steroids in high doses taken regularly without bone protection can make bones easier to fracture.

Question B Marks per correct tick [1]

Empagliflozin and ramipril-associated hypotension can make the patient feel dizzy and lead to falls.
Metformin would not be implicated as it will not cause a hypoglycaemic episode.
(GI bleed a possibility as on steroid and NSAID but urea and haemoglobin normal)

Planning Management Item

ID MAN005

This item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 32-year-old woman develops postpartum haemorrhage relating to uterine atony. **PMH.** Nil **DH.** Folic acid and ferrous sulfate supplements.

On examination
Temperature 36.8°C, HR 96/min and regular, BP 114/66 mmHg, RR 22/min, O_2 sats 97% (94–98) breathing air. Ongoing PV bleeding.

Volume resuscitation has been initiated, and potential blood transfusion has been arranged.

Question
Select the *most appropriate* management option at this stage. (*mark it with a tick*)

MANAGEMENT OPTIONS

A	Noradrenaline infusion, adjusted to blood pressure response	☐
B	Oxytocin 5 units intravenously by slow injection	X
C	Salbutamol 5 mg intravenously by slow infusion	☐
D	Terbutaline sulfate 100 micrograms intravenously by slow injection	☐
E	Tranexamic acid 1 g intravenously by slow injection	☐

Answer box

Option A Justification

There is currently no immediate need for inotropic / blood pressure support. Inotropic support may be indicated if haemodynamics are not maintained with fluid resuscitation alone

Option B Justification

Oxytocin (or ergometrine) may be used in uterine atony

Option C Justification

Salbutamol is an option for tocolysis. Reducing uterine tone can worsen postpartum haemorrhage

Option D Justification

Terbutaline is a beta2 adrenoreceptor agonist, and used as a tocolytic. Use in this case will exacerbate the postpartum haemorrhage

Option E Justification

Tranexamic acid is useful for mennorhagia as an antifibrinolytic agent, but not of use in uterine atony

“I know nothing about O+G!”

- This is a good example of how to look for a management plan
  - The following suggestions however do not always work!
  - **If you think you already know the answer, go for it!**
  - **DO NOT SPEND TIME YOU DON’T HAVE SEARCHING!**

- Also be aware that there are potentially different search terms
  - “Postpartum haemorrhage”?
  - “Uterine atony”?
  - (For example, “hypokalaemia” is also “potassium loss”)

Planning Management Item

ID MAN006

This item is worth **2 marks**

You may use the BNF at any time BNF

Case presentation
A 34-year-old woman with a history of asthma is visiting her General Practitioner for worsening of her asthma control. She now requires up to three puffs of salbutamol as a reliever per day.
DH. Salbutamol inhaler as required, beclometasone dipropionate 400 micrograms inhaled 12-hrly.

Compliance and inhaler technique has been checked to be good, and trigger factors have been addressed.

Question
Select the *most appropriate* management option at this stage.
(*mark it with a tick*)

MANAGEMENT OPTIONS

A	Add ipratropium bromide 20 micrograms inhaled 6-hrly	☐
B	Add monteleukast 10mg orally once daily	X
C	Add prednisolone 30 mg orally daily	☐
D	Add salmeterol 50 micrograms inhaled 12-hrly	☐
E	Increase beclomethasone diproprionate to 1 mg inhaled 12-hrly	☐

Answer box

Option A Justification

Ipratropium is not typically used in chronic asthma (and not as Step 3)

Option B Justification

For NICE guidance (see later re: NICE vs BTS), monteleukast is appropriate for step 2

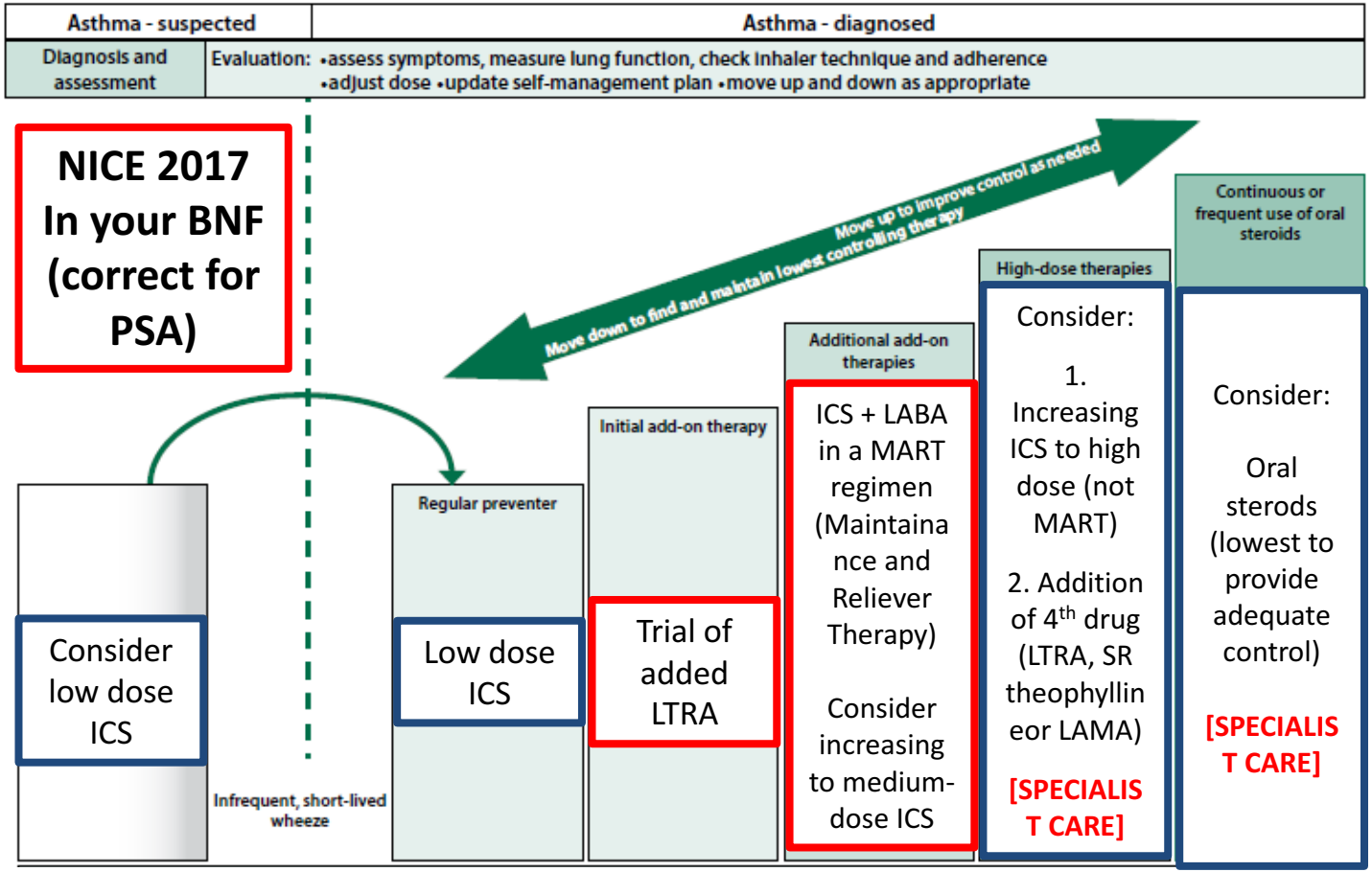
Option C Justification

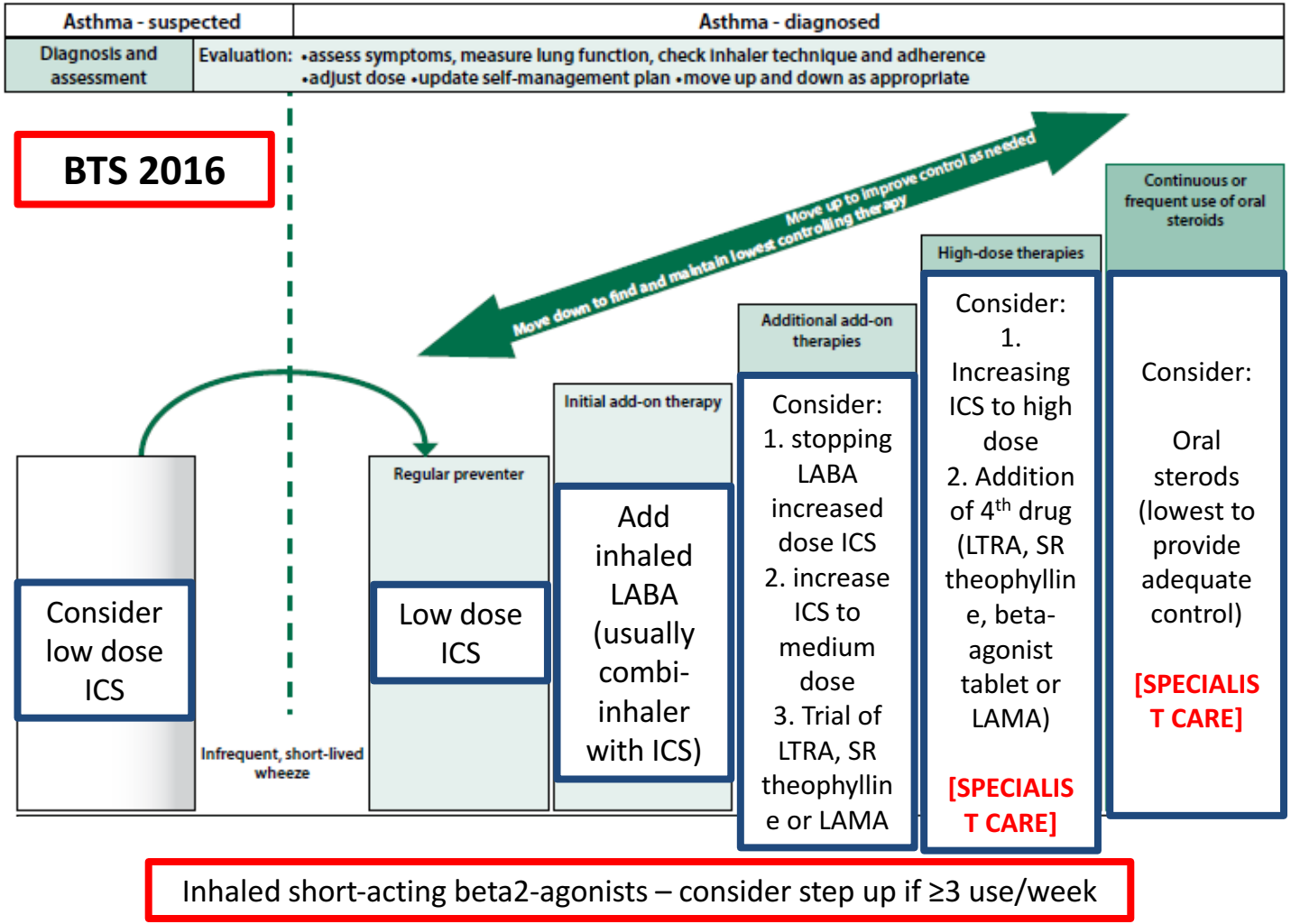
Oral prednisolone is typically used in acute exacerbations, or as Step 5 therapy

Option D Justification

This is an may be considered as Step 3 treatment for NICE guidance

Option E Justification


Asthma - suspected
Asthma - diagnosed
Diagnosis and assessment
Evaluation: •assess symptoms, measure lung function, check inhaler technique and adherence •adjust dose •update self-management plan •move up and down as appropriate
NICE 2017 In your BNF (correct for PSA)
Move up to improve control as needed
Move down to find and maintain lowest controlling therapy
Consider low dose ICS
Infrequent, short-lived wheeze
Regular preventer
Low dose ICS
Initial add-on therapy
Trial of added LTRA
Additional add-on therapies
ICS + LABA in a MART regimen (Maintaina nce and Reliever Therapy)
Consider increasing to medium-dose ICS
High-dose therapies
Consider:
1. Increasing ICS to high dose (not MART)
2. Addition of 4th drug (LTRA, SR theophyllin eor LAMA)
[SPECIALIS T CARE]
Continuous or frequent use of oral steroids
Consider:
Oral sterods (lowest to provide adequate control)
[SPECIALIS T CARE]


Asthma - suspected
Asthma - diagnosed
Diagnosis and assessment
Evaluation: •assess symptoms, measure lung function, check inhaler technique and adherence
•adjust dose •update self-management plan •move up and down as appropriate
BTS 2016
Move up to improve control as needed
Move down to find and maintain lowest controlling therapy
Consider low dose ICS
Infrequent, short-lived wheeze
Regular preventer
Low dose ICS
Initial add-on therapy
Add inhaled LABA (usually combi-inhaler with ICS)
Additional add-on therapies
Consider:
1. stopping LABA increased dose ICS
2. increase ICS to medium dose
3. Trial of LTRA, SR theophyllin e or LAMA
High-dose therapies
Consider:
1. Increasing ICS to high dose
2. Addition of 4th drug (LTRA, SR theophyllin e, beta-agonist tablet or LAMA)
[SPECIALIS T CARE]
Continuous or frequent use of oral steroids
Consider:
Oral sterods (lowest to provide adequate control)
[SPECIALIS T CARE]
Inhaled short-acting beta2-agonists – consider step up if ≥3 use/week

Planning Management Item

ID MAN007

This item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 72-year-old man with metastatic lung cancer is being treated for palliative symptom control. His only current symptom is severe nausea and vomiting. He is unable to tolerate liquids or tablets.

Question
Select the *most appropriate* management option at this stage.
(*mark it with a tick*)

MANAGEMENT OPTIONS

A	Cyclizine 50 mg intravenously as required	☐
B	Diamorphine 20 mg subcutaneously over 24 hours	☐
C	Haloperidol 2.5 mg subcutaneously over 24 hours	X
D	Hyoscine butylbromide 1.2 mg subcutaneously over 24 hours	☐
E	Ondansetron 8 mg orally 12-hrly	☐

Answer box

Option A Justification

Although cyclizine may appropriate in this case, the intravenous route and “as required” frequency may not be best

Option B Justification

Diamorphine is used for predominantly pain management, and may worsen the nausea.

Option C Justification

This is an appropriate subcutaneous dose , and this route may be most appropriate with a syringe driver

Option D Justification

Hyoscine bytylbromide is used for bowel colic and excessive secretions in palliative care

Option E Justification

Oral medications are not appropriate with the severity of his symptoms.

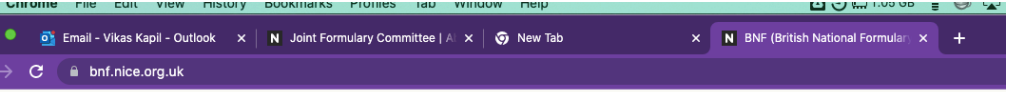
Palliative prescribing

- Key principles
  - Number of drugs should be as few as possible
  - Oral medication can be satisfactory unless there is severe nausea and vomiting, dysphagia, weakness, or coma
  - Sometimes consider patches
    - For medium-to-long-term analgesia
    - **Not** for end-of-life care
    - Not easy to titrate
  - End-of-life care typically uses subcutaneous prescriptions either as required, or in continuous (24hr) syringe driver. Especially if
    - The patient is unable to take medicines by mouth owing to *nausea and vomiting*, *dysphagia*, *severe weakness*, or *coma*
    - There is *malignant bowel obstruction* in patients for whom further surgery is inappropriate (avoiding the need for an intravenous infusion or for insertion of a nasogastric tube)
    - When the patient *does not wish* to take regular medication by mouth.

- **Note:** doses differ between continuous subcutaneous infusions compared to one-off subcutaneous injections (please check!)

Palliative prescribing

- Be familiar with the "**prescribing in palliative care" section** in the BNF
- Contains generic advice on
  - Pain management
  - Opioid conversions
  - Symptom control



NIC

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Continuous subcutaneous infusions

Although drugs can usually be administered *by mouth* to control the symptoms of advanced cancer
administration of
has led to the use
to give a *continuc*
symptoms with lit

Indications for the

- the patient is u
dysphagia, sev
- there is *malign*
inappropriate (
nasogastric tul
- occasionally w

Nausea and vomiting

Haloperidol and levomepromazine can both be given as a *subcutaneous infusion* but sedation can limit the dose of levomepromazine.

Cyclizine is particularly likely to precipitate if mixed with diamorphine or other drugs (see under Mixing and compatibility, below)

Metoclopramide hydrochloride can cause skin reactions.

Octreotide, which stimulates water and electrolyte absorption and inhibits water secretion in the small bowel, can be used by subcutaneous infusion to reduce intestinal secretions and to reduce vomiting due to bowel obstruction.

Pain control

Planning Management Item

ID MAN008

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 72-year-old man presents to the resuscitation room at 2am, tachypneoic and gasping for breath. **PMH**. STEMI 1 year ago. CABG, CKD. **DH.** Ramipril 5 mg orally daily, bendroflumethiazide 2.5 mg orally daily; amlodipine 10 mg orally daily, aspirin 75 mg orally daily, atorvastatin 40 mg orally nightly.

On examination
Temperature 37°C, HR 130/min and regular, BP 140/80 mmHg, JVP raised, RR 30/min, O_2 sat 95% on 15L, HS difficult to hear, chest sounds crackles bilaterally. Pitting oedema of lower limbs.

Investigations
Na^+ 138mmol/L (137–144), K^+ 3.7mmol/L (3.5–4.9), U 4.0 mmol/L (2.5–7.0), eGFR 44.
ECG sinus tachycardia. CXR bilateral pleural effusions, cardiomegaly.

Question
Select the *most appropriate* management option at this stage. (*mark it with a tick*)

MANAGEMENT OPTIONS

A	0.9% sodium chloride 1 L intravenously over 6 hours	☐
B	Aspirin 300 mg orally and clopidogrel 600 mg orally	☐
C	Bisoprolol 2.5 mg orally	☐
D	Furosemide 80 mg intravenously by slow injection	X
E	Isosorbide mononitrate 120 mg orally	☐

Answer box

Option A Justification

IV fluids may exacerbate acute heart failure

Option B Justification

Antiplatelets will not help in acute heart failure.

Option C Justification

Although beta blocker provide prognostic benefits in the long-term, it is not first line treatment to be added in the acute phase of heart failure.

Option D Justification

Furosemide is necessary to treat this patients acute heart failure. As a powerful loop diuretic it will promote a rapid diuresis which will improve is respiratory symptoms by removing excess load from the circulatory system. Larger doses of furosemide is occasionally required.

Option E Justification

Although a nitrate is indicated in this case. Oral nitrate therapy is not appropriate in this setting. Instead GTN infusion will help in acute heart failure by improving cardiovascular functioning. GTN is a powerful vasodilator and acts in Acute Heart Failure by reducing left ventricular

Communicating Information Item | ID | COM007 | This question item is worth **2 marks** | You may use the BNF at any time | BNF

Case presentation
A 36-year-old man has been admitted with a moderately severe lower respiratory tract pneumonia treated with co-amoxiclav 1.2 g intravenously 8-hrly and oral clarithromycin 500 mg orally 12-hrly. **SH.** He also reports drinking alcohol daily between 20 to 25 units a day.

He has been initiated on a reducing-dose course of chlordiazepoxide.

Question
Select the *most appropriate* information option that should be communicated to the patient.
(*mark it with a tick*)

INFORMATION OPTIONS

A	Chlordiazepoxide increases the risk of withdrawal symptoms	☐
B	Chlordiazepoxide is also suitable for long-term management of his alcohol dependence when discharged from hospital care	☐
C	Chlordiazepoxide is also used to reverse opiate overdoses	☐
D	The dose of his chlordiazepoxide is calculated based on his level of alcohol dependence	X
E	The dose of his chlordiazepoxide may need to be changed when he changes from intravenous to oral antibiotics	☐

Answer box

Option A Justification

Chlordiazepoxide treatment aims to reduce the risk of withdrawal symptoms

Option B Justification

Chlordiazepoxide should be a short-term management of preventing alcohol withdrawal symptoms, and not a long-term treatment of dependence

Option C Justification

Naloxone is used for opiate overdose. Chlordiazepoxide is a benzodiazepine-class hypnotic/sedative

Option D Justification

The starting dose (and rate of reduction) is based on the regular alcohol consumption of the patient

Option E Justification

Chlordiazepoxide does not have significant interactions with either co-

Chlordiazepoxide advice

- Chlordiazepoxide is a benzodiazepine-class hypnotic/sedative used as prophylaxis against alcohol withdrawals (NOT opiate withdrawals)
  - It is NOT prophylaxis against Wernicke's encephalopathy (does NOT contain vitamins)
- Dosing depends on degree of alcohol dependence
- If patients have symptoms of alcohol withdrawals, the dose might be increased
- It is usually prescribed as a reducing-dose regime over several days
- It is <u>not</u> typically prescribed for outpatient use
  - It is NOT to maintain abstinence long-term

Chlordiazepoxide advice

- **Side effects** are similar to other benzodiazepines
- **Pregnancy** - risk of neonatal withdrawal symptoms when used during pregnancy
- **Breast feeding** - benzodiazepines are present in milk, so ideally not to breast feed while prescribed chlordiazepoxide
- **Hepatic impairment** – dose reduce
- **Renal impairment** – dose reduce
- **Skilled tasks** - Drowsiness may persist the next day and affect performance of skilled tasks

Communicating Information Item

ID COM008

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
An 4-year-old girl is about to have her routine immunisations for DTP (diphtheria, tetanus and pertussis) and poliomyelitis boosters, and her second dose of MMR (measles, mumps and rubella) vaccines. She has had her previous immunisations on schedule.
PMH. One episode of febrile seizures during a lower respiratory tract infection 4 months ago.

Question
Select the *most appropriate* information option that should be communicated to her carer.
(*mark it with a tick*)

INFORMATION OPTIONS

A	Her immunisations should be postponed for at least one year without seizures	☐
B	Her immunisations should be split over six months, rather in one appointment	☐
C	Ibuprofen is contraindicated in her age group	☐
D	If pyrexia develops, the parent can give paracetamol for up to two doses 4 to 6 hours apart	X
E	The febrile seizure is a contraindication for rubella boosters	☐

Answer box

Option A Justification

There is no indication to postpone her immunisations

Option B Justification

There is no indication to split her immunizations

Option C Justification

Ibuprofen is a suitable alternative to paracetamol

Option D Justification

This is the recommended self (parent)-management of post-vaccination pyrexia

Option E Justification

Febrile seizures are not absolute contraindications to vaccinations, although additional care should be taken

Vaccines communications

- Be familiar with **treatment summaries → vaccines**
  - Know what you can find there
  - Also know how to look up individual vaccines

- Contraindications
  - Confirmed anaphylactic reaction to a preceding dose or component
  - Previous anaphylactic reaction to egg
    - Should not be given tick-borne encephalitis vaccine, and yellow fever vaccine should only be considered under the guidance of a specialist.
  - Live vaccines may be contra-indicated temporarily in:
    - Pregnancy (but where there is a significant risk of exposure to disease, e.g. yellow fever, the need for vaccination usually outweighs risk)
    - Severely immunosuppressed
    - Specialist advice should be sought for those being treated with high doses of corticosteroids, or other immunosuppressive drugs
    - Chemotherapy or generalised radiotherapy.

Vaccines communications

- Acute illness
  - May be postponed if fever or systemic upset.
- Breast-feeding
  - Usually not contraindicated, but see individual vaccines.
- HIV-positive individuals should **not** receive:
  - BCG, influenza nasal spray (unless receiving stable antiretroviral therapy), typhoid (oral), yellow fever.
- Patients with bleeding disorders such as haemophilia or thrombocytopenia
  - Vaccines usually given by the intramuscular route should be given by deep subcutaneous injection instead.

Vaccines communications

- Post-immunisation pyrexia in infants
  - If pyrexia, and the infant seems distressed, paracetamol can be given and, if necessary, a second dose can be given 4–6 hours later.
  - Ibuprofen can be used if paracetamol is unsuitable.
  - The parent should seek medical advice if the pyrexia persists.

- Predisposition to neurological problems
  - History of stable neurological disorders, convulsions or *febrile* convulsions is **not** a contra-indication to immunisation (with precautions)
  - With a ***still evolving*** *neurological problem*, including poorly controlled epilepsy, immunisation should be *deferred* and referred to a specialist.

Communicating Information Item

ID COM009

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 67-year-old man with a new diagnosis of atrial fibrillation was assessed for his risk of thromboembolic disease, and the patient-doctor decision was to start warfarin.

Question
Select the *most appropriate* information option that should be communicated to the patient.
(*mark it with a tick*)

INFORMATION OPTIONS

A	If a warfarin dose is missed, it is appropriate to double the dose the next day	☐
B	If a warfarin dose is missed, it is appropriate to take the dose later in the day	X
C	INR is a blood test that indicates long-term control of anti-coagulation	☐
D	Warfarin commonly causes nausea and vomiting	☐
E	Warfarin should be taken after food to prevent gastritis	☐

Answer box

Option A Justification

Doubling the dose significantly increases the risk of haemorrhage

Option B Justification

This is the appropriate advice

Option C Justification

INR is only a measure of short-term control

Option D Justification

Warfarin can (rarely/very rarely) result in nausea/vomiting. Even if true, to inform patient of correct way of taking drug is *most appropriate*

Option E Justification

Gastritis is not a common side effect of warfarin, and is unlikely to be improved by food.

Warfarin advice

- Good resource at https://www.nhs.uk/conditions/warfarin/
  - Have a read before the exam, of course you can't access it during the exam

- Patients should be given a **patient-held information booklet** ('warfarin card')
- Caution about drug-drug **interactions** including over-the-counter medication/supplements (and drug-food interactions, such as vitamin K-supplements and foods, EtOH, certain fruits)
- **Side effects**
  - Discuss bleeding risk, and patient to report any abnormal bleeding, and unusual headaches
  - Seek urgent medical attention if you're taking warfarin and you have a fall or accident, experience a significant blow to your head, are unable to stop any bleeding, have signs of bleeding, such as bruising
  - Skin rashes and hair loss are also common side effects
- Discuss **teratogenicity** and contraception
- "Appears safe in **breast feeding**"

Warfarin advice

- **Renal impairment**
  - use with caution and needs and increase INR monitoring with severe impairment
- **Hepatic impairment**
  - avoid in severe impairment, especially if prothrombin time is already prolonged
- **Missed doses**
  - If evening doses is missed, take on the same day if remembered before midnight on the same day
  - If midnight has passed, leave that dose and take your normal dose the next day at the usual time.
- **Monitoring**
  - INR determined daily or on alternate days in early days, *then* at longer intervals (depending on response), *then* up to every 12 weeks.
  - Change in clinical condition, e.g liver disease, renal disease, intercurrent illness, or drug administration, necessitates more frequent testing
  - INR only indicates short-term control

Calculation Skills Item	ID	CAL004 (CLO-CAL148)	This question item is worth **2 marks**	You may use a calculator at any time 

Case presentation
A 35 year-old man was admitted to hospital. He has been requires 6 micrograms/kg/minute drug X intravenously.

He weighs 78kg.

Drug X is available as a 100mg/25ml solution for infusion.

Calculation
What rate (mL/hr, to the closest 0.1 mL/hr) of Drug X should the patient be given?
(Write your answer in the box below)

Answer **7.0** mL/hr

Answer box

Correct answer

7.0 mL/hr

Working

Dose-per-time = 6 micrograms/kg/min x 78kg
= 468 micrograms/min
= (468*60) micrograms/hr
= 28,080 micrograms/hr
= 28.08 mg/hr

Concentration = 100mg / 25ml
= 4 mg/mL

Rate = Dose-per-unit-time / Concentration
Rate = 28.08 mg/hr / 4 mg/mL
= 7.02 mL/hr
= 7.0 mL/hr (to the nearest 0.1 ml/hr)

Calculation Skills Item

ID	CAL005

This question item is worth **2 marks**

You may use a calculator at any time

Case presentation
A 26-year-old man with type I diabetes mellitus is suffering a hypoglycaemic episode. He is drowsy and unable to orally consume glucose. He was given 50 ml of 20% glucose intravenously.

Calculation
How much glucose was given?
(Write your answer in the box below)

Answer 10 grams

Answer box

Correct answer

10 grams

Working

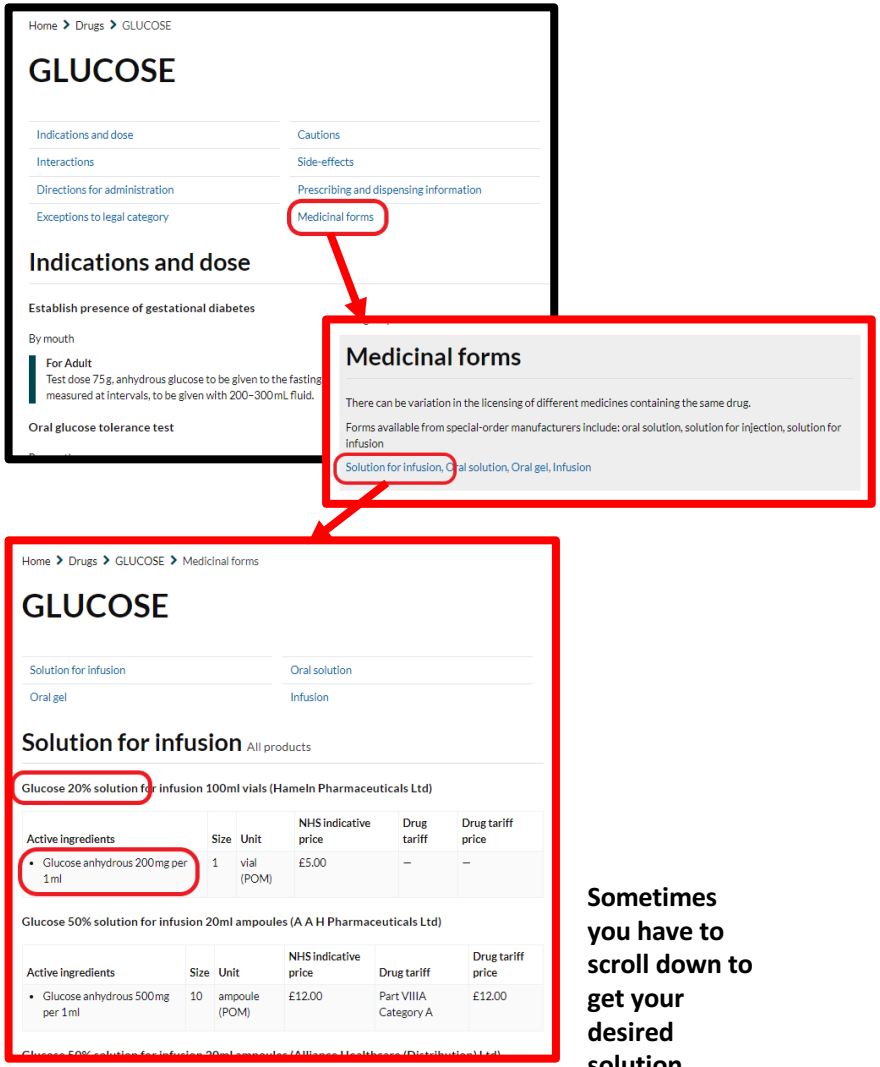
20% (w/v) = 20g/100ml
= 0.2g/ml
Therefore 50ml provides 0.2g/ml x 50ml = 10g

Calculations with percentages

Conversions

- 100% = 1 **g/mL**
- 1% = 1g/100mL
- (Or however you prefer to remember)

- But if you cannot remember on the day, the BNF often as a conversion for the specific drug



Sometimes you have to scroll down to get your desired solution

Calculation Skills Item

ID	CAL006

This question item is worth **2 marks**

You may use a calculator at any time

Case presentation
A 6-year-old girl requires an anti-emetic in the emergency department. She is prescribed cyclizine intravenously at a dose of 0.5 mg/kg (maximum dose 25mg). She weighs 20 kg.

Cyclizine comes in 50 mg/ml ampoules.

Calculation
What volume (microliters) of cyclizine is required?
(Write your answer in the box below)

Answer **200** microlitres

Answer box

Correct answer

200 microlitres

Working

20kg x 0.5mg/kg = 10 mg
10 mg/50mg/ml = 0.2ml = 200 microliters

Calculation Skills Item

ID	CAL007

This question item is worth **2 marks**

You may use a calculator at any time

Case presentation
A 76-year-old woman with angina has been prescribed GTN via syringe driver at 10 micrograms per minute. The stock GTN is initially provided at 1 mg/mL, which is subsequently diluted 1 in 10.

Calculation
What is the correct rate (mL/hr) of infusion?
(Write your answer in the box below)

Answer 6 mL/hr

Answer box

Correct answer

6ml/hr

Working

Working concentration = 1mg/ml x 1/10
= 0.1mg/ml
= 100 micrograms/ml

Required dose per hour
= 10 micrograms/minute x 60 minutes
= 600 micrograms/hour

Rate = 600 micrograms/hour / 100 micrograms/ml
= 6ml/hr

Adverse Drug Reactions Item – Type A

ID	ADR109

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation

A 53-year-old woman attends her General Practitioner seeking help for smoking cessation. She has trial over-the-counter nicotine replacement therapy without success.

In addition to practical advice, they have agreed to trial varenicline with dose uptitration for a 12 week course.

Question

Select the adverse effect that is *most likely* to be caused by this treatment.

(*mark it with a tick*)

ADVERSE EFFECT OPTIONS

A	Abnormal dreams	x
B	Hyponatraemia	
C	Loss of consciousness	
D	Menorrhagia	
E	Suicidal ideation	

Answer box

Option A Justification

Abnormal dreams is a common side effect of varenicline, as also expected from many centrally acting drugs (e.g. antidepressants etc). However, listed in BNF as “sleep disorders”

Option B Justification

Hyponatraemia is not a listed side effect of varenicline

Option C Justification

Listed as “frequency not known” in BNF. This could mean anywhere between “very common” and “very rare”. It is likely to be a rare side effect.

Option D Justification

Menorrhagia is listed as an uncommon side effect.

Option E Justification

Suicidal ideation is uncommon, but important part of counselling patient (See “Important safety information” section in BNF). However, this

(may exacerbate underlying illness including depression); predisposition to seizures

Side-effects

Common or very common

Appetite abnormal; asthenia; chest discomfort; constipation; diarrhoea; dizziness; drowsiness; dry mouth; gastrointestinal discomfort; gastrointestinal disorders; headache; joint disorders; muscle complaints; nausea; oral disorders; pain; skin reactions; sleep disorders; vomiting; weight increased

Note that the symptom does not always match BNF terminology!

Uncommon

Allergic rhinitis; anxiety; arrhythmias; behaviour abnormal; burping; conjunctivitis; depression; eye pain; fever; fungal infection; haemorrhage; hallucination; hot flush; hyperglycaemia; influenza like illness; malaise; menorrhagia; mood swings; numbness; palpitations; seizure; sexual dysfunction; suicidal ideation; sweat changes; thinking abnormal; tinnitus; tremor; urinary disorders

Although very important, the question asks about "frequency"

Rare or very rare

Angioedema; bradyphrenia; coordination abnormal; costochondritis; cyst; diabetes mellitus; dysarthria; eye disorders; feeling cold; glycosuria; muscle tone increased; polydipsia; psychosis; scleral discolouration; severe cutaneous adverse reactions (SCARs); snoring; vaginal discharge; vision disorders

Frequency not known

Loss of consciousness

Could range from "very common" to "very rare". You have to make your own clinical judgement

Adverse Drug Reactions Item – Type B

ID	ADR203

This item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 67-year-old man with chronic heart failure is admitted to hospital after his GP notices that his serum creatinine concentration has become acutely elevated from its baseline value of around 150 µmol/L to 450 µmol/L (60–110) over two weeks.

Question
Select the prescription that is *most likely* to be contributing to the acute deterioration in renal function.
(*mark it with a tick*)

PRESCRIPTION OPTIONS

A	Aspirin 75 mg orally daily	☐
B	Bisoprolol 5 mg orally daily	☐
C	Digoxin 125 micrograms orally daily	☐
D	Furosemide 160 mg orally daily	X
E	Nifedipine LA 60 mg orally daily	☐

Answer box

Option A Justification

Aspirin is a non-steroidal anti-inflammatory drug but at this low cardiovascular preventative dose it is unlikely to have any significant effect on renal function.

Option B Justification

Bisoprolol has little impact on renal function

Option C Justification

Digoxin is a drug that has to be used with care in patients with renal impairment but is not, itself, a cause of renal impairment.

Option D Justification

Furosemide is a powerful loop diuretic, use of which can lead to dehydration with consequent impairment of renal function.

Option E Justification

Nifedipine is not known to cause renal impairment.

Acute kidney injury / nephrotoxins

- Need to recognise the difference between medications that
  - May cause a reduction in renal function
    - The aim of this question
    - See next slide
  - Require dose adjustments with reduced renal function
    - E.g. digoxin in this question
  - Both of the above

Acute kidney injury / nephrotoxins

- List of common (potential) nephrotoxins
  - "POTENTIAL" is important – they *can*, but *not always*
  - This is a non-exhaustive list
    - Diuretics, especially loop diuretics — not directly toxic, change renal haemodynamics
    - ACEi/ARBs — not directly toxic, change renal haemodynamics
    - NSAIDs
    - Aspirin and paracetamol in overdose
    - Statins and fibrates (with rhabdomyolysis)
    - Anti-infectives (<u>rarely when oral</u>)
      - Aminoglycosides such as gentamicin
      - Vancomycin
      - Some penicillins and cephalosporins
      - Intravenous anti-fungals such as amphotericin B
      - Certain intravenous antivirals such as acyclovir
    - Radiocontrast agents (possibly)
    - Lithium in overdose
    - Certain immunosupressants and chemotherapy
  - Of course, not all AKIs are drug-related

Adverse Drug Reactions Item – Type C

ID ADR303

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 73-year-old woman is being treated in hospital for an exacerbation of chronic obstructive pulmonary disease. **DH.** Theophylline and inhaled salbutamol. Her other current regular in-patient prescriptions are listed (right).

Question
Select the prescription that is *most likely* to interact with theophylline.
(*mark it with a tick*)

PRESCRIPTION OPTIONS

A	Ciprofloxacin 500 mg orally 12-hrly	X
B	Enoxaparin 40 mg subcutaneously daily	☐
C	Ipratropium 500 micrograms nebulised 6-hrly	☐
D	Prednisolone 30 mg orally daily	☐
E	Salbutamol 2.5 mg nebulised 6-hrly	☐

Answer box

Option A Justification

Ciprofloxacin is an enzyme inhibitor and increases theophylline levels. Theophylline has a narrow therapeutic index and high levels may precipitate seizures and cardiac dysrhythmias

Option B Justification

Enoxaparin has few drug-drug interactions.

Option C Justification

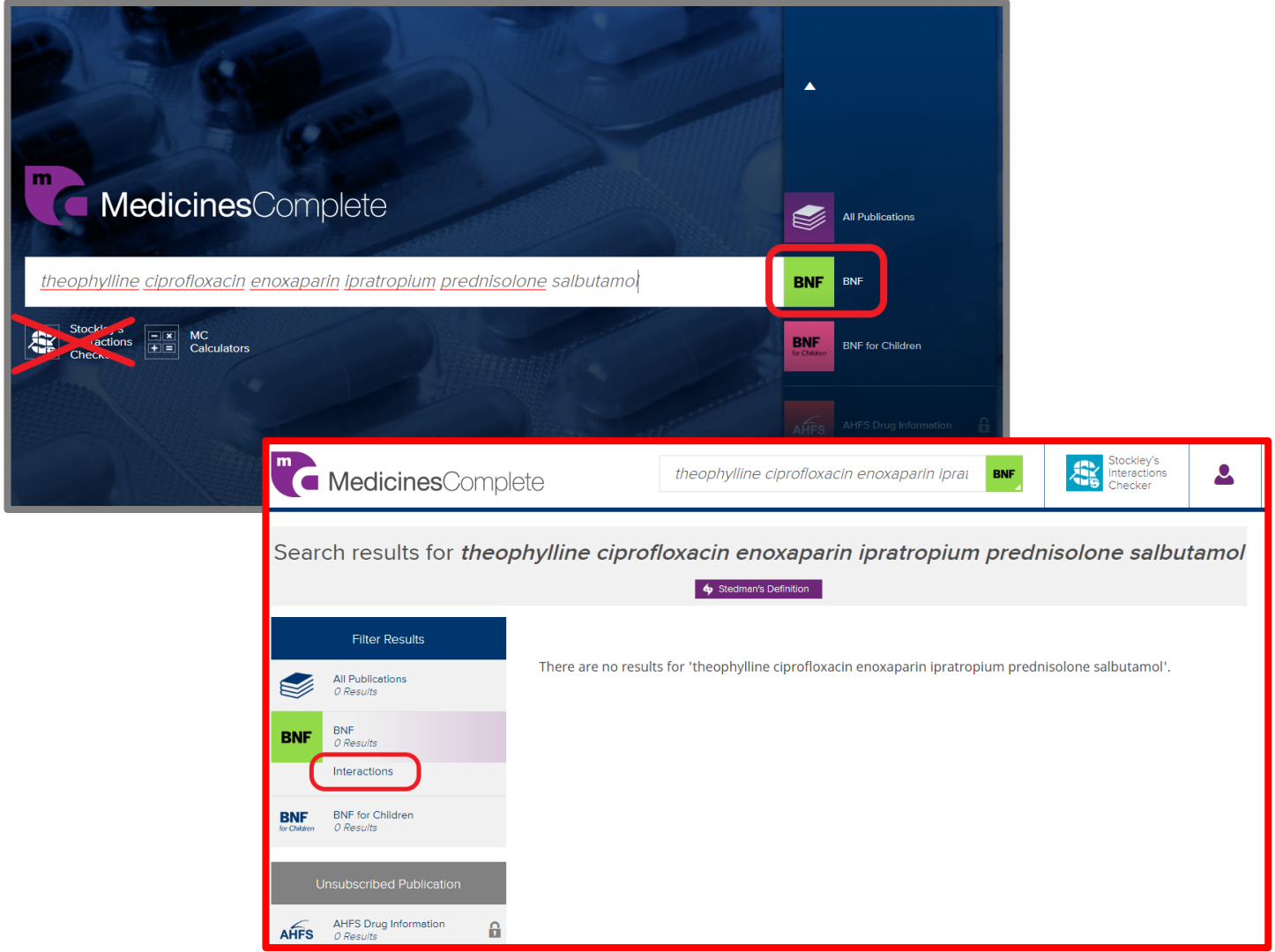
Ipratropium does not interact with theophyllines

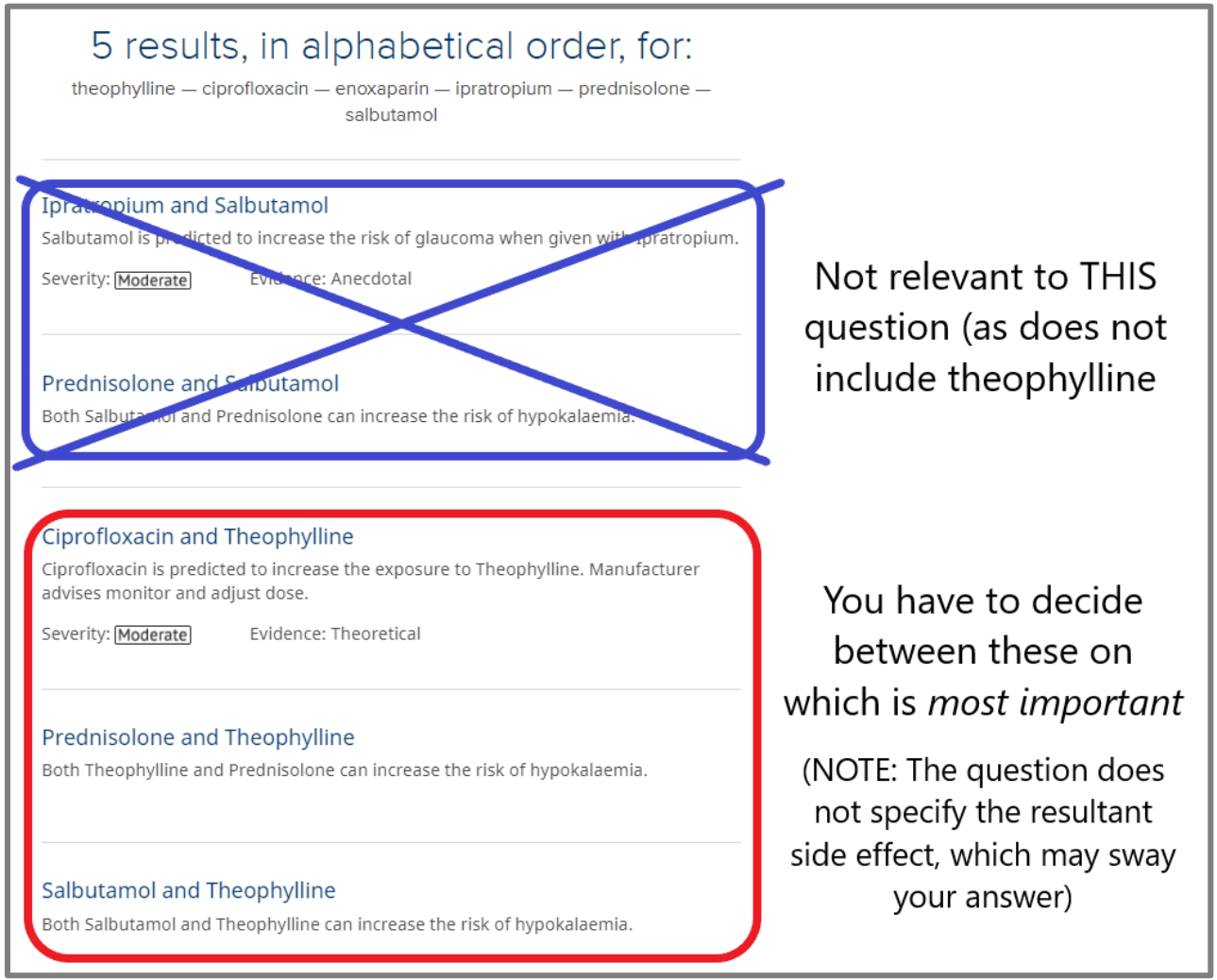
Option D Justification

Prednisolone does not interact significantly with theophyllines

Option E Justification

Nebulised drugs rarely have significant interactions with oral drugs


MedicinesComplete
theophylline ciprofloxacin enoxaparin ipratropium prednisolone salbutamol
MC Calculators
All Publications
BNF
BNF
BNF for Children
AHFS Drug Information
MedicinesComplete
theophylline ciprofloxacin enoxaparin ipra
BNF
Stockley's Interactions Checker
Search results for theophylline ciprofloxacin enoxaparin ipratropium prednisolone salbutamol
Stedman's Definition
Filter Results
All Publications
0 Results
BNF
0 Results
Interactions
BNF for Children
0 Results
Unsubscribed Publication
AHFS Drug Information
0 Results
There are no results for 'theophylline ciprofloxacin enoxaparin ipratropium prednisolone salbutamol'.


5 results, in alphabetical order, for:
theophylline — ciprofloxacin — enoxaparin — ipratropium — prednisolone — salbutamol
Ipratropium and Salbutamol
Salbutamol is predicted to increase the risk of glaucoma when given with Ipratropium.
Severity: Moderate
Evidence: Anecdotal
Prednisolone and Salbutamol
Both Salbutamol and Prednisolone can increase the risk of hypokalaemia.
Ciprofloxacin and Theophylline
Ciprofloxacin is predicted to increase the exposure to Theophylline. Manufacturer advises monitor and adjust dose.
Severity: Moderate
Evidence: Theoretical
Prednisolone and Theophylline
Both Theophylline and Prednisolone can increase the risk of hypokalaemia.
Salbutamol and Theophylline
Both Salbutamol and Theophylline can increase the risk of hypokalaemia.
Not relevant to THIS question (as does not include theophylline
You have to decide between these on which is *most important*
(NOTE: The question does not specify the resultant side effect, which may sway your answer)

Adverse Drug Reactions Item – Type D

T D | ADR403

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 75-year-old man with multiple myeloma and reactive depression took an overdose of his amitriptyline. On presentation, he was tachycardic and drowsy.

Investigations
His ECG showed a sinus tachycardia with QRS duration of 130 ms.

Question
Select the *most appropriate* option for the immediate management of this adverse drug reaction.
(*mark it with a tick*)

MANAGEMENT OPTIONS

A	10% calcium gluconate 10 mls intravenously	☐
B	Atropine 3 mg intravenously	☐
C	Haemodialysis	☐
D	Hydrocortisone 200 mg intravenously	☐
E	Sodium bicarbonate 50 mmol intravenously	X

Answer box

Option A Justification

Calcium gluconate protects cardiac myocytes from the effects of hyperkalaemia.

Option B Justification

Atropine is indicated to reverse bradycardia.

Option C Justification

Haemodialysis is indicated for overdoses with likely organ failure in overdoses with a small volume of distribution

Option D Justification

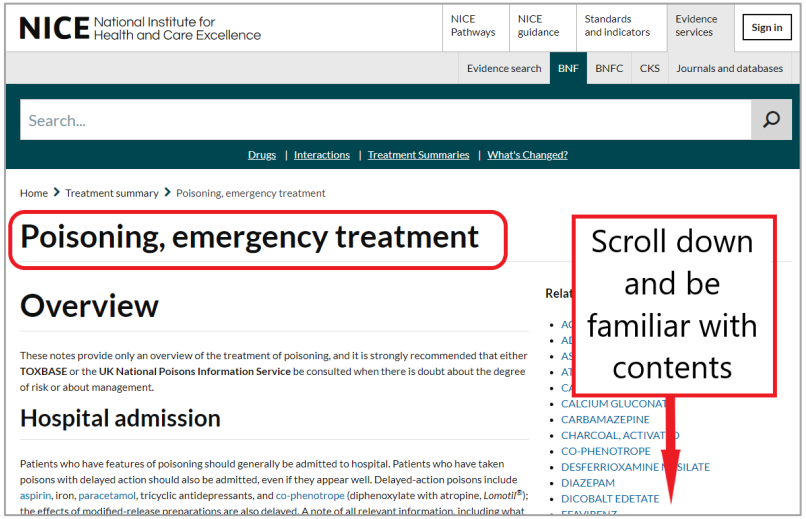
Hydrocortisone has a role in the emergency treatment of anaphylactic and Addisonian reactions.

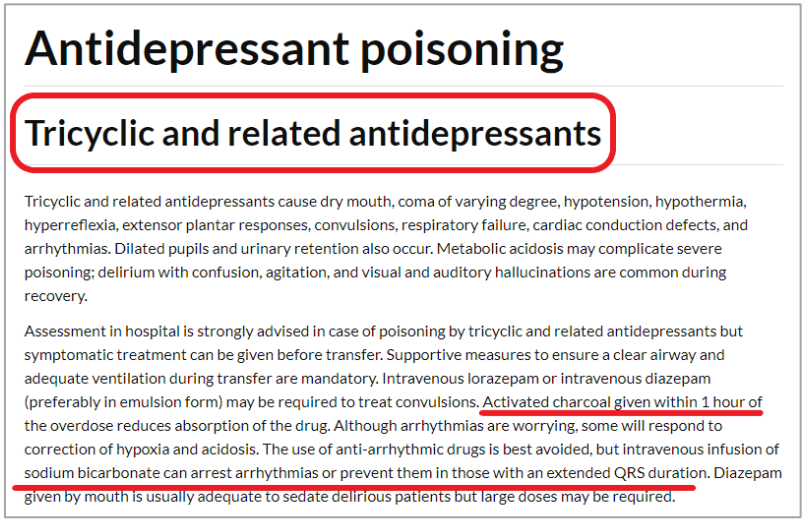
Option E Justification

TCA overdose leads to sodium channel blocking in the myocardium that predisposes to tachyarhythmias. The first sign of impending cardiovascular complications is prolongation of the QRS complex. Sodium bicarbonate increases TCA protein binding, dislodges TCAs from the sodium channel and increases TCA elimination.

“Poisoning, emergency treatment”

- Be familiar with the content here. Contains guidance on how to treat overdoses with:
  - Aspirin
  - Opioids
  - Paracetamol
  - Tricyclic antidepressants
  - SSRIs
  - Benzodiazepines
  - Beta-blockers
  - Calcium channel blockers
  - Lithium
  - (And many more)





Data Interpretation Item | ID | DAT005 | This question item is worth **2 marks** | You may use the BNF at any time | BNF

Case presentation
A 49-year-old woman is in hospital while she commences lithium carbonate (Priadel®) 1 g orally daily for bipolar disorder. She has been noted to have mild tremors and slightly slurred speech. **PMH.** Hypertension. **DH.** Ramipril 5mg orally daily.

A level was taken 12 hours after her fourth dose and has come back as 1.35 mmol/L (target range 0.4-1 mmol/L). Initially she is given 0.9% sodium chloride 1 L intravenously over 4 hours, and her lithium treatment withheld for one day. Her lithium levels the following day is 1.0 mmol/L and her symptoms are resolving.

Question
Select the *most appropriate* decision option with regard to optimising her lithium level based on these data.
(*mark it with a tick*)

DECISION OPTIONS

A	Continue Priadel® at 1 g orally daily	☐
B	Reduce Priadel® to 500 mg orally daily	X
C	Reduce ramipril to 2.5 mg orally daily	☐
D	Switch from Priadel® 1 g orally daily to Camcolit® 1 g orally daily	☐
E	Switch from ramipril to losartan 12.5 mg orally daily	☐

Answer box

Option A Justification

The current lithium levels is related to the 0.9% sodium chloride treatment, and does not reflect what her levels would be if she persists with the 1g dose.

Option B Justification

A reduction in dose to 500mg should ensure that this lady can continue taking her ramipril and lithium, however, the level needs rechecking in 3-4days. It is always wise to seek specialist advice on using this toxic drug with a narrow therapeutic index.

Option C Justification

ACE inhibitors are effective in treating high blood pressure, but reduce the excretion of lithium salts. Reducing the Ramipril may worsen BP control.

Option D Justification

Switching lithium salts is tricky and not recommended as each preparation has a different bioavailability profile.

Option E Justification

duce may

Data Interpretation Item

ID	DAT031 (CLO-DAT030)

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation

A 35-year old, 70-kg man with no known co-morbidities presents to Accident and Emergency stating he has taken a deliberate overdose of 20 tablets of 500 mg paracetamol. He reports that he took them 6 hours, and took all the tablets within 5 minutes. He is currently asymptomatic and compliant with treatment.

Investigations (at 6 hours post-ingestion)

Bili 14 µmol/L (1–22), ALT 30 U/L (5–35), AST 25 U/L (1–31), alk phos 82 U/L (45–105), GGT 42 U/L (<50).
INR 1.1 (<1.4)
Plasma-paracetamol concentration 0.38 mmol/L
Plasma salicylate not detected

He is also being provided appropriate psychological support.

Question

Select the *most appropriate* decision option with regard to the paracetamol overdose based on these data.
(*mark it with a tick*)

DECISION OPTIONS

A	0.9% sodium chloride as gastric lavage	
B	Acetylcysteine 10.5g intravenously over 1 hour	
C	Activated charcoal 50mg orally	
D	Methionine 500mg orally 4hr-ly	
E	No medical treatment required	x

Answer box

Option A Justification

Gastric lavage is now rarely required.
May be consider within the 1st hour for substances that cannot be removed effectively by other means (e.g. iron) in life-threatening doses.

Option B Justification

He does not require treatment as below the treatment line. This would however be the correct treatment if his plasma paracetamol concentrations were above the treatment line

Option C Justification

May be considered if potentially toxic doses consumed within the last hour

Option D Justification

Oral methionine is a rarely used second-line (unlicensed) alternative to N-acetylcysteine for paracetamol overdoses.

Option E Justification

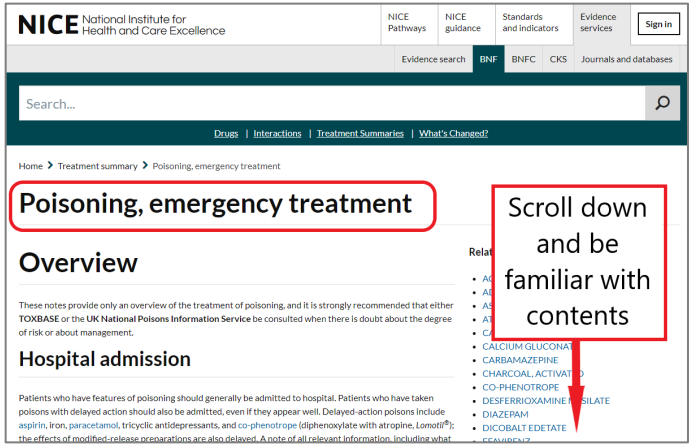
He does not require treatment as below the treatment line

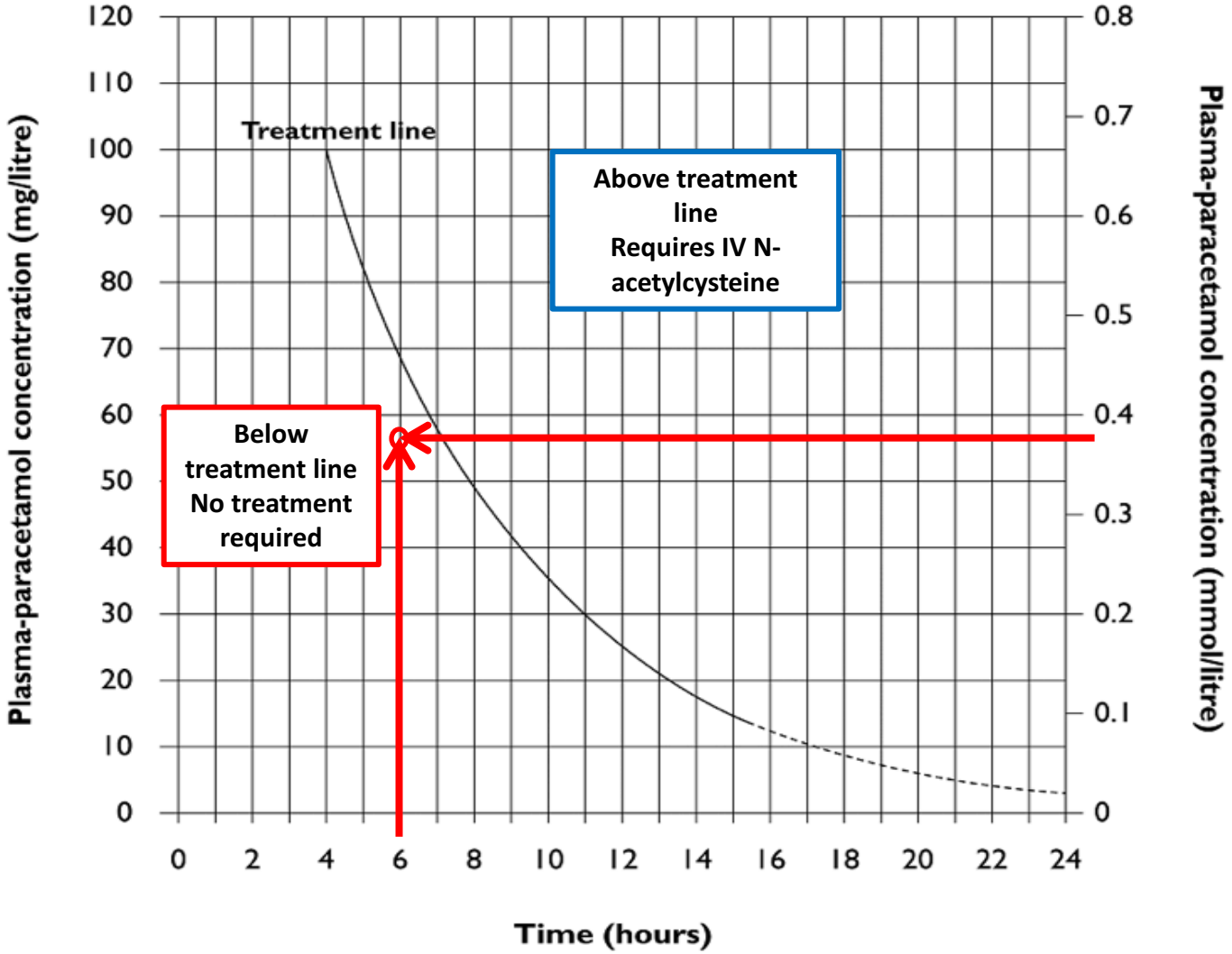
Paracetamol OD

- Know where to find information on overdoses
- Treatment summaries > Treatment summaries by body system > poisoning
- Understand what to do for patients who present:
  - Within one hour
  - Within 4 hours
  - Within 4-24 hours
  - After 24 hours
  - Staggered overdose, uncertain time of overdose and therapeutic excess

“Poisoning, emergency treatment”

- Be familiar with the content here. Contains guidance on how to treat overdoses with:
  - Aspirin
  - Opioids
  - Paracetamol
  - Tricyclic antidepressants
  - SSRIs
  - Benzodiazepines
  - Beta-blockers
  - Calcium channel blockers
  - Lithium
  - (And many more)




Plasma-paracetamol concentration (mg/litre)
120
110
100
90
80
70
60
50
40
30
20
10
0
Plasma-paracetamol concentration (mmol/litre)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Treatment line
Above treatment line
Requires IV N-acetylcysteine
Below treatment line
No treatment required
0
2
4
6
8
10
12
14
16
18
20
22
24
Time (hours)

Data Interpretation Item | ID DAT007 | This item is worth **2 marks** | You may use the BNF at any time

Case presentation
A 72-year-old man attends the anti-coagulation clinic for routine monitoring and is found to have an INR of 7.9. He has no signs of bleeding. He usually takes warfarin 3 mg orally daily to maintain an INR of 2.5 for atrial fibrillation.

Question
Select the *most appropriate* decision option with regard to the warfarin prescription based on these data.
(*mark it with a tick*)

DECISION OPTIONS

A	Continue warfarin at 2 mg daily	☐
B	Omit warfarin for 2 doses and then restart at lower dose	X
C	Omit warfarin, give vitamin K 3 mg intravenously	☐
D	Omit warfarin, give vitamin K 5 mg and prothrombin complex intravenously	☐
E	Omit warfarin, give vitamin K 5 mg orally	☐

Answer box

Option A Justification

This is inappropriate and may lead to excessive anticoagulation for a prolonged period

Option B Justification

This is appropriate treatment for INR 5-8 with no bleeding.

Option C Justification

This is appropriate treatment for INR >8 with no bleeding.

Option D Justification

This is appropriate treatment for INR >8 with minor bleeding.

Option E Justification

This is appropriate treatment for raised INR with major bleeding

Warfarin, high INR

- Be familiar with looking at **Treatment summaries → Oral anticoagulants**

- Know what you can find there
- Contains generic advice on
  - Target INR
  - Duration of treatment wit DVTs
  - Action with high INRs / bleeding
  - Peri-operative management

Oral anticoagulants

Overview

Scroll down

The main use of anticoagulants is to prevent thrombus formation or extension of an existing thrombus in the slower-moving venous side of the circulation, where the thrombus consists of a fibrin web enmeshed with platelets and red cells.

Anticoagulants are of less use in preventing thrombus formation in arteries, for in faster-flowing vessels thrombi are composed mainly of platelets with little fibrin

embolism, long-term anticoagulation may be required.

Haemorrhage

The main adverse effect of all oral anticoagulants is haemorrhage. Checking the INR and omitting doses when appropriate is essential; if the anticoagulant is stopped but not reversed, the INR should be measured 2–3 days later to ensure that it is falling. The cause of an elevated INR should be investigated. The following recommendations (which take into account the recommendations of the British Society for Haematology Guidelines on Oral Anticoagulation with Warfarin—fourth edition. *Br J Haematol* 2011; **154**: 311–324) are based on the result of the INR and whether there is major or minor bleeding; the recommendations apply to adults taking warfarin:

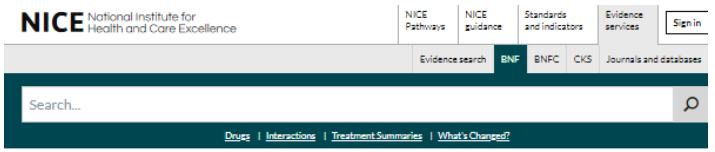
- Major bleeding—stop warfarin sodium; give phytomenadione (vitamin K_1) by slow intravenous injection; give dried prothrombin complex (factors II, VII, IX, and X); if dried prothrombin complex unavailable, fresh frozen plasma can be given but is less effective; recombinant factor VIIa is not recommended for emergency anticoagulation reversal

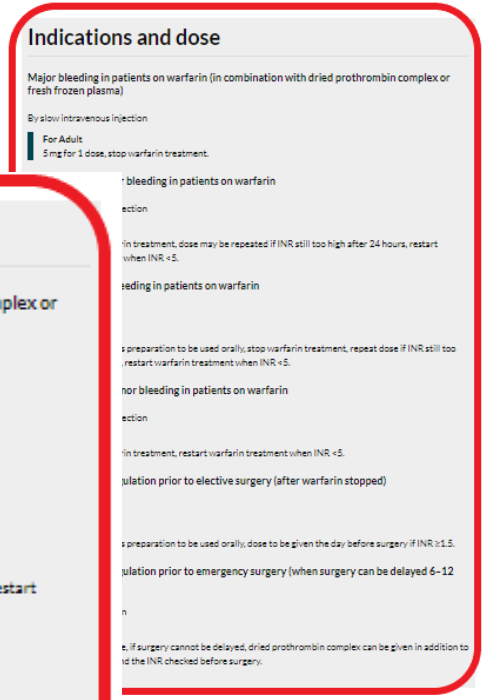
Need to know:
1.INR
2.Severity of bleeding

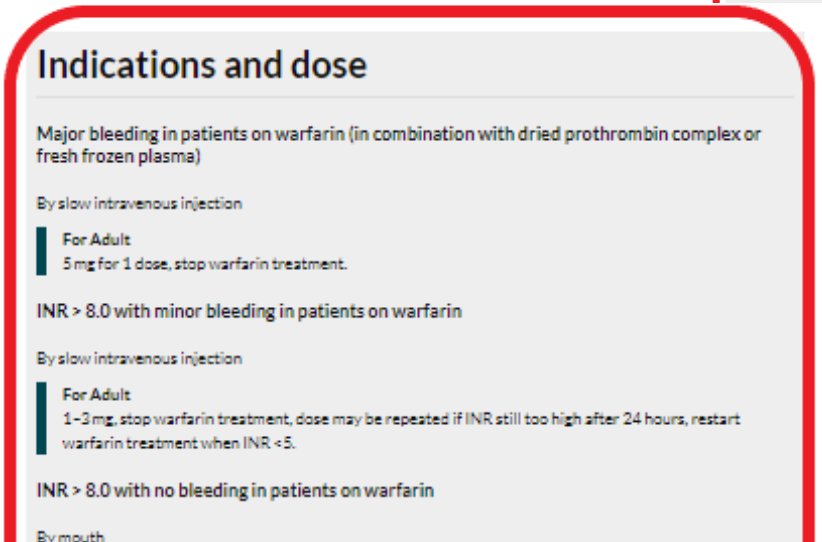
Bleeding	INR	Action
Major (limb or life-threatening)	**Any**	Stop warfarin Give phytomenadione (vitamin K1) 5 mg slow i.v. Give dried prothrombin complex 25–50 units/kg i.v. (If dried prothrombin complex unavailable, give FFP but less effective)
Minor	**>8.0**	Stop warfarin Give phytomenadione (vitamin K_1) 1–3 mg slow i.v. (Repeat dose of phytomenadione if INR still too high after 24 hours) Restart warfarin when INR <5.0
	5.0 – 8.0	Stop warfarin Give phytomenadione (vitamin K_1) 1–3 mg slow i.v. Restart warfarin when INR <5.0
Nil	**>8.0**	Stop warfarin Give phytomenadione (vitamin K_1) 1–5 mg p.o. (Repeat dose of phytomenadione if INR still too high after 24 hours) Restart warfarin when INR <5.0
	5.0 – 8.0	Withhold 1 or 2 doses of warfarin Reduce subsequent maintenance dose

Also, you can search “phytomenadione”
But contains less info e.g.

- How much dried prothrombin complex
- What to do when no bleeding and INR 5-8







Drug Monitoring Item

ID	TDM027 (CLO-TDM022)

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 24-year old man is having his diabetic control reviewed. He is currently asymptomatic. **PMH.** Type I diabetes. **DH.** Basal-bolus insulin.

He has concerns that his lunchtime dose is too high.

Question
Select the *most appropriate* monitoring option to assess the effects of lunchtime dose of insulin.
(*mark it with a tick*)

MONITORING OPTIONS

A	Bedtime capillary blood glucose	
B	Haemoglobin A1c	
C	Post-lunch capillary blood glucose	
D	Pre-evening meal capillary blood glucose	x
E	Pre-lunch capillary blood glucose	

Answer box

Option A Justification

Bedtime capillary blood glucose would be a good measure of evening meal dose

Option B Justification

Haemoglobin A1c would assess long-term control

Option C Justification

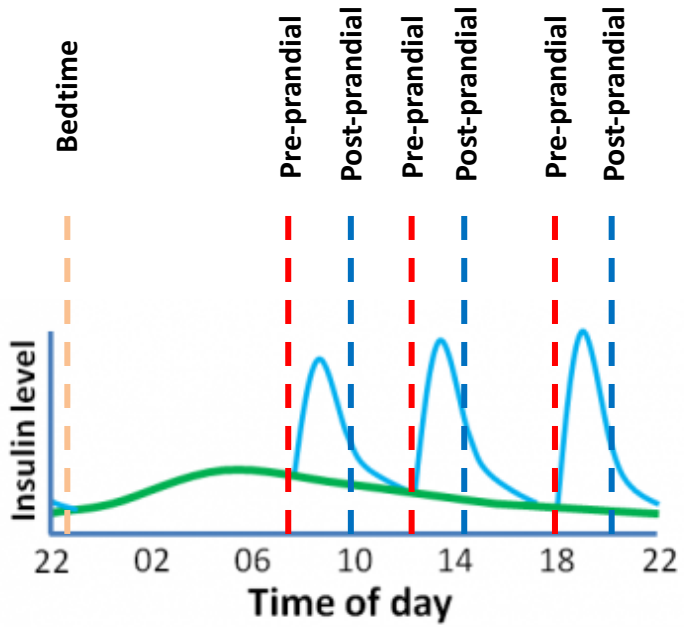
While post-lunch capillary blood glucose is influenced by lunchtime dose, it is not the usual way of assessing impact (usually the next pre-meal glucose level). Furthermore, if his “dose is too high”, a post-meal glucose level is unlikely to detect hypoglycaemia.

Option D Justification

The pre-evening meal capillary blood glucose would be the most likely time point to detect hypoglycaemia relating to the lunch-time dose

Option E Justification

The pre-lunch glucose level in influenced by the breakfast dose



Basal-bolus therapy

	MAIN influence on blood glucose
Pre-breakfast	Basal dose
Post-breakfast	Breakfast dose
Pre-lunch	(Breakfast and basal dose)
Post-lunch	Lunch dose
Pre-evening meal	(Lunch and basal dose)
Post-evening meal	Evening meal dose

Drug Monitoring Item

ID TDM006

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 78-year-old woman is commenced on lithium as prophylaxis for bipolar affective disorder.

Question
Select the *most appropriate* monitoring option that should be arranged for this patient.
(*mark it with a tick*)

MONITORING OPTIONS

A	Eye movements	☐
B	Fractional renal sodium excretion	☐
C	Hand-grip strength	☐
D	Pulmonary function tests	☐
E	Thyroid function	X

Answer box

Option A Justification

Nystagmus is a feature of toxicity but is not specific enough to be able to be used for monitoring

Option B Justification

Fractional renal sodium excretion is occasionally used to evaluate acute kidney injury. Lithium is associated with diabetes insipidus and 6-monthly renal function is mandated.

Option C Justification

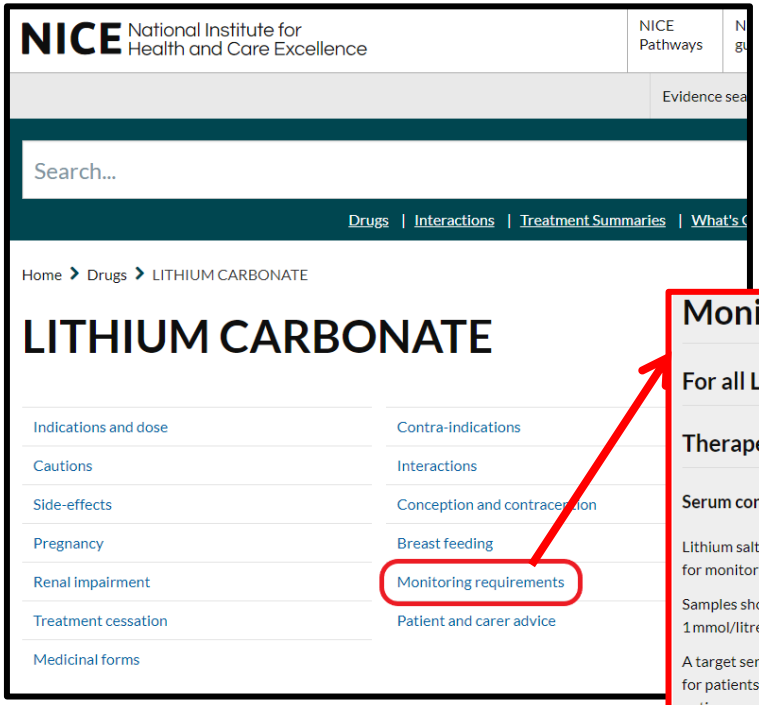
Lithium can cause tremor but not muscular weakness

Option D Justification

Lithium is not associated with pulmonary disease

Option E Justification

Long-term lithium can affect thyroid function, and therefore should be checked 6-monthly or when symptoms of thyroid disease occur.



Monitoring requirements

For all LITHIUM SALTS

Therapeutic drug monitoring

Serum concentrations

Lithium salts have a narrow therapeutic/toxic ratio and should therefore not be prescribed unless facilities for monitoring serum-lithium concentrations are available.

Samples should be taken 12 hours after the dose to achieve a serum-lithium concentration of 0.4–1 mmol/litre (lower end of the range for maintenance therapy and elderly patients).

A target serum-lithium concentration of 0.8–1 mmol/litre is recommended for acute episodes of mania, and for patients who have previously relapsed or have sub-syndromal symptoms. It is important to determine the optimum range for each individual patient.

Routine serum-lithium monitoring should be performed weekly after initiation and after each dose change until concentrations are stable, then every 3 months thereafter. Additional serum-lithium measurements should be made if a patient develops significant intercurrent disease or if there is a significant change in a patient's sodium or fluid intake.

Monitoring of patient parameters

Manufacturer advises to assess renal, cardiac, and thyroid function before treatment initiation. An ECG is recommended in patients with cardiovascular disease or risk factors for it. Body-weight or BMI, serum electrolytes, and a full blood count should also be measured before treatment initiation.

Monitor body-weight or BMI, serum electrolytes, eGFR, and thyroid function every 6 months during treatment, and more often if there is evidence of impaired renal or thyroid function, or raised calcium levels. Manufacturer also advises to monitor cardiac function regularly.

Drug Monitoring Item

ID TDM007

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 68-year-old man with type 2 diabetes mellitus has had his long- and short-acting insulin adjusted upwards in clinic 5 months ago. At clinic today he reports he took his insulin as prescribed.

Question
Select the ONE *most appropriate* monitoring options to assess the impact of this treatment.
(*mark it with a tick*)

MONITORING OPTIONS		
A	Assessing peripheral neuropathy	☐
B	Blood glucose diary	X
C	Body mass index	☐
D	Fasting blood glucose	☐
E	Fasting lipid profile	☐

Answer box

Option A Justification

This must be assessed at every visit, but is not a method used to judge compliance to insulin treatment.

Option B Justification

Reviewing a blood glucose diary for evidence of good blood sugar levels is important, as is deciding if any hypoglycaemic episodes have occurred.

Option C Justification

Body mass index will not tell you how compliant the patient has been with their insulin regime.

Option D Justification

Following diagnosis of diabetes mellitus, fasting blood glucose is not a good representation of glucose control, and definitely not long-term control

Option E Justification

Lipid profile will not tell you anything about his compliance with insulin.

Drug Monitoring Item

ID TDM008

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation

A 28-year-old woman attends her General Practitioner to discuss options for contraception. **PMH.** None. **DH.** None.

After discussion, they agree to start Levest® 150/30 tablets (levonorgestrel 150 micrograms / ethinylestradiol 30 micrograms), 1 active tablet once daily for 21 days, followed by 1 inactive tablet once daily for 7 days.

Question

Select the *most appropriate* monitoring option that should be arranged routinely for this patient.
(*mark it with a tick*)

MONITORING OPTIONS

A	Blood pressure	X
B	Breast examination	☐
C	Liver function tests	☐
D	Oxygen saturations	☐
E	Urine microscopy	☐

Answer box

Option A Justification

COCPs can increase BP and should be stopped if BP > 160/95 mmHg

Option B Justification

There is no indication for breast examination routinely

Option C Justification

COCP can cause deranged LFTs but it is not routinely monitored

Option D Justification

COCP is a major risk factor for PE but this can not be screened for

Option E Justification

There is no indication for urine microscopy screening

Reminder

- Full results to follow from Tom Schindler / Dr Nimesh Patel