SPE2 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 Anghof method pass mark 62%
  - Fail (<62%)
  - Borderline pass (62-65%)
  - Good pass (>65%)

  - 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	PWS103

This item is worth **10 marks**

You may use the BNF at any time

Case presentation
A 32 year old woman who is 39 weeks pregnant is due to undergo an elective caesarean section. **PMH.** None. **DH.** None.

Prescribing request
Write the most appropriate prescription to reduce the risk of surgical infection.

ONCE ONLY MEDICINES

Date (dd/mm /yyyy)	Start time (hh:mm)	Medicine (Approved name)	Dose	Route	Signature (including surname)	Time given	Given by

PWS - antibiotics

- **<u>Most appropriately choose cefuroxime</u>**

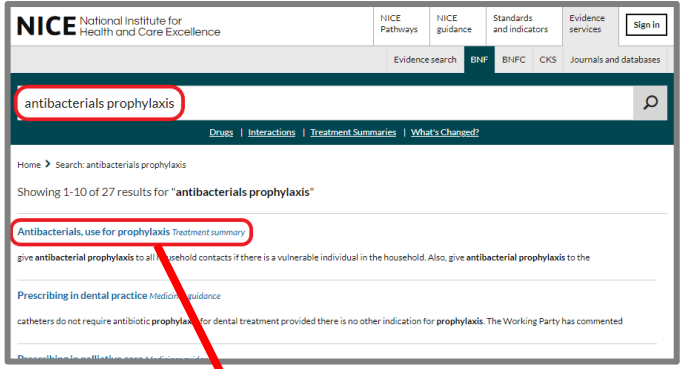
- Other choose many different options…
  - Co-amoxicillin
  - Amoxicillin
  - Ampicillin

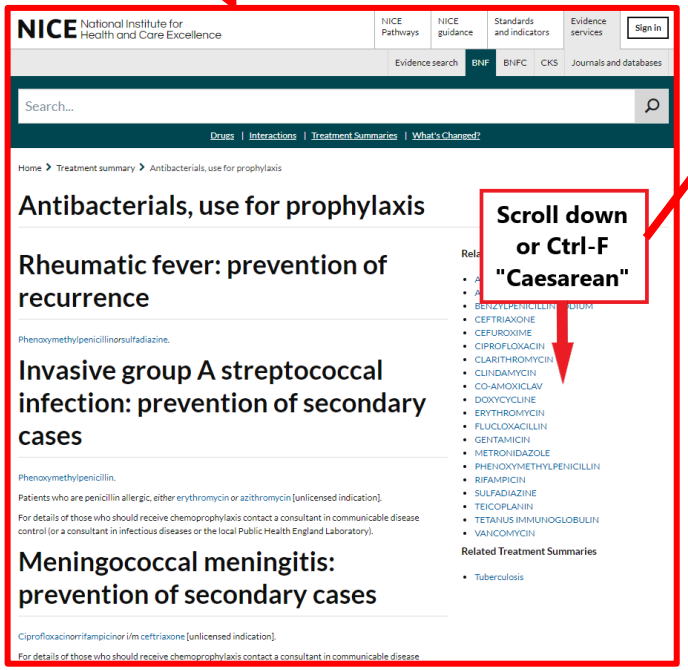
- Also note: you have to use the drug name
  - A small number choose “cephalosporins” which will not provide ANY marks

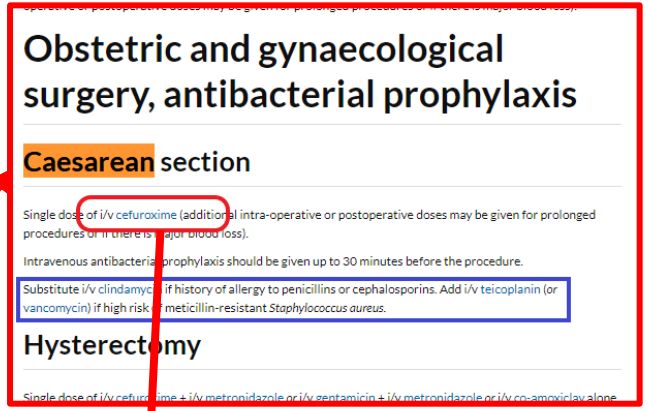
Prescribing Item | ***Answer Page*** | **ID** PWS103 | This question item is worth **10 marks** | You may use the BNF at any time

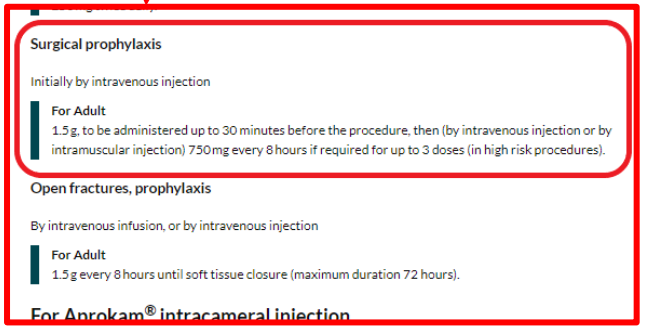
	A. Drug choice	Score	Feedback/justification		B. Dose, route, freq.	Score	Feedback/justification
1	Cefuroxime	5	Recommended prophylactic antibiotics for Caesarean section		1.5g, intravenously	5	Correct dose and route
					1.5g intramuscularly	3	Although valid route, it would be unnecessary discomfort when IV access is already present
					Other doses, or other routes	0	
4	Clindamycin	3	Alternative if allergy to penicillins or cephalosprins (which she does not have)		600mg iv	3	Recommended dose unclear in BNF
					Other doses	1	
5	Teicoplanin	1	Alternative if high risk of MRSA (which she does not have)		400 mg intravenously	1	
					Other doses, or other routes	0	
6	Metronidazole	1	Adjunctive, not be to used as monotherapy		500mg intravenously	1	
					Other doses, or other routes	0	

Be aware of where to find guidance on prophylactic antibiotics









Prescribing Item

ID PWS205

This question item is worth **10 marks**

You may use the BNF at any time

Case presentation
A 70-year old man is admitted to the Medical Admissions Unit with a moderate-severity community acquired pneumonia. He has already been started on appropriate antibiotics. He is expected to have reduced mobility relative to his normal state.

On examination
Weight 80kg

Investigations
eGFR >90 ml/min
Hb 143 g/L (115-165), WCC 16.2 x 10^9/L (4.0-11.0), Plt 302 x 10^9/L (150-400).

Prescribing request
Write a prescription for ONE drug that will treat reduce the risk of venous thromboembolism.
(use the hospital 'regular medicines' prescription chart provided)

		Date					
		Time					
Drug (Approved name)		6					
Dose	Route	8					
		12					
Signature (including surname)	Start date (dd/mm/yyyy)	14					
Notes	Pharmacy	18					
		22					

PWS - thromboprophylaxis

- **<u>Most choose an appropriate low molecular weight heparin</u>**

- Wrong options
  - some choose “heparin” or “unfractionated heparin
    - Typically reserved for those with renal dysfunction where dosing of LMWH is difficult
  - some choose a direct oral anticoagulant
    - NOT an indication for “medical” thromboprophylaxis
  - Also note: you have to use the drug name
    - “low molecular weight heparin” which will NOT SCORE ANY MARKS

VTE prophylaxis

Be aware of indications and contraindications (see right)

Typically low molecular weight heparin

- May need to consider weight
- Dosed based on renal function
- (If renal function very low) may need unfractionated heparin SC
  - but be wary that it is either bd /tds.

<u>Orthopaedic</u> (knee or hip) surgery

- In addition to LMWH, oral anticoagulants such as apixaban, dabigatran and rivaroxaban is licenced

Mobility – all patients (tick one box)	**Tick**		**Tick**		**Tick**
Surgical patient		Medical patient expected to have ongoing reduced mobility relative to normal state		Medical patient NOT expected to have significantly reduced mobility relative to normal state	
Assess for thrombosis and bleeding risk below				**Risk assessment now complete**	

Thrombosis risk			
Patient related	**Tick**	**Admission related**	**Tick**
Active cancer or cancer treatment		Significantly reduced mobility for 3 days or more	
Age > 60		Hip or knee replacement	
Dehydration		Hip fracture	
Known thrombophilias		Total anaesthetic + surgical time > 90 minutes	
Obesity (BMI >30 kg/m²)		Surgery involving pelvis or lower limb with a total anaesthetic + surgical time > 60 minutes	
One or more significant medical comorbidities (eg heart disease;metabolic,endocrine or respiratory pathologies;acute infectious diseases; inflammatory conditions)		Acute surgical admission with inflammatory or intra-abdominal condition	
Personal history or first-degree relative with a history of VTE		Critical care admission	
Use of hormone replacement therapy		Surgery with significant reduction in mobility	
Use of oestrogen-containing contraceptive therapy			
Varicose veins with phlebitis			
Pregnancy or < 6 weeks post partum (see NICE guidance for specific risk factors)			

Bleeding risk			
Patient related	**Tick**	**Admission related**	**Tick**
Active bleeding		Neurosurgery, spinal surgery or eye surgery	
Acquired bleeding disorders (such as acute liver failure)		Other procedure with high bleeding risk	
Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with INR >2)		Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours	
Acute stroke		Lumbar puncture/epidural/spinal anaesthesia within the previous 4 hours	
Thrombocytopaenia (platelets< $75x10^9$/l)			
Uncontrolled systolic hypertension (230/120 mmHg or higher)			
Untreated inherited bleeding disorders (such as haemophilia and von Willebrand's disease)			

Prescribing Item | ***Answer Page*** | ID PWS205 | This question item is worth **10 marks** | You may use the BNF at any time

	A. Drug choice	Score	Feedback/justification		B. Dose, route, freq.	Score	Feedback/justification
1	Dalteparin	5	Appropriate LWMH		5000 units subcutaneously daily	5	Correct dose
					2500 units or >5000 units subcutaneously daily	3	Surgical dose, or treatment dose respectively
2	Enoxaparin	5	Appropriate LWMH		40 mg subcutaneously daily	5	Correct dose
					20mg or >40mg subcutaneously daily	3	Surgical dose, or treatment dose respectively
3	Tinzaparin	5	Appropriate LWMH in clinical practice (although not in BNF)		4500 units subcutaneously daily	5	Correct dose in clinical practice (although not in BNF)
					3500 units daily	4	Not for medical patients
4	Fondaparinux	5	Although not usually used in many trusts, it is an acceptable choice		2.5mg subcutaneously daily	5	Correct dose
					>2.5mg subcutaneously daily	2	This is treatment dose for DVT/PE
5	Unfractionated heparin	1	Second-line if renal function does not allow LWMH (as bd dosing)		5000 units subcutaneously 8-12hrly	1	
6	Edoxaban	0	Licenced for treatment of deep-vein thrombosis and prophylaxis of recurrent deep-vein thrombosis but not prophylaxis in medical patients				
7	Other direct oral anticoagulants	0	Licenced for prophylaxis in orthopedic surgery (hip and knee) but not medical patients				

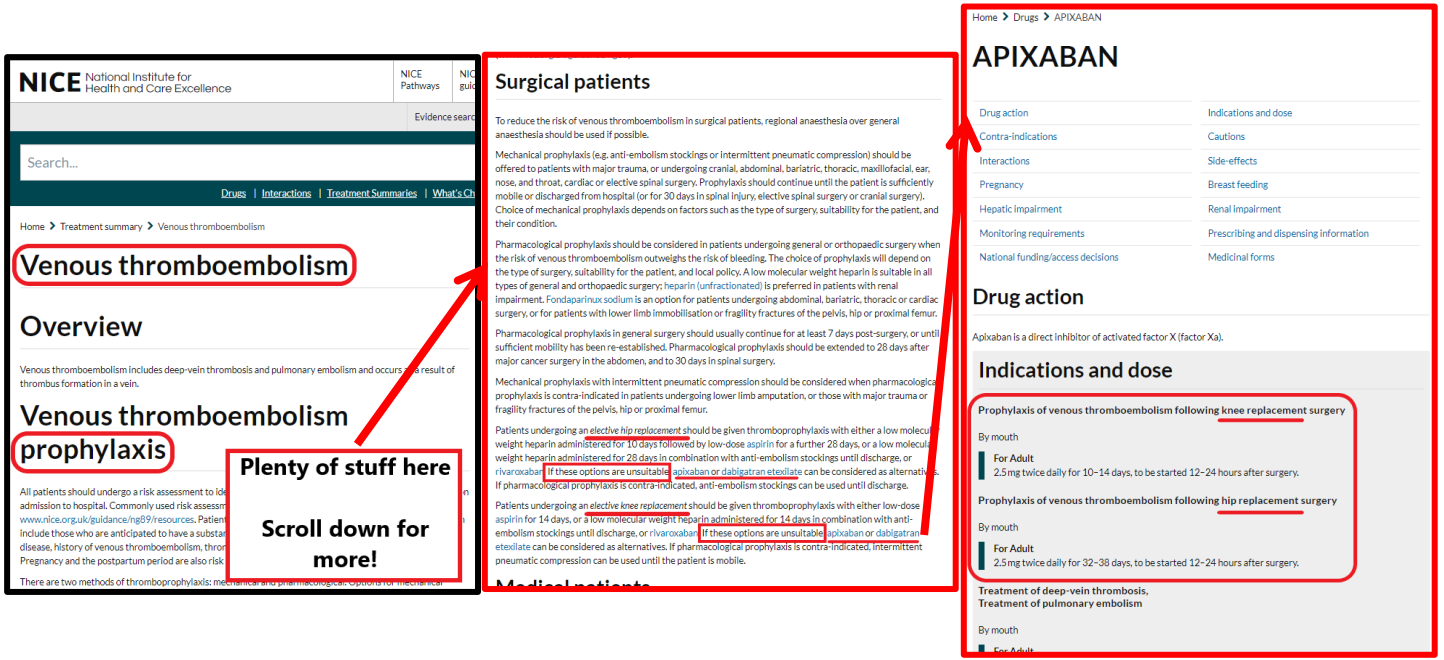
Side learning point: Oral VTE prophylaxis

- May be considered in **selected elective surgical** scenarios
  - Elective hip replacement
  - Elective knee replacement

- Usually as second-line
  - If first-line low molecular weight heparin not suitable (e.g. patient choice / needle-phobia)

- Rivaroxaban, apixaban, dabigatran
- NOT edoxaban

Side learning point: Oral VTE prophylaxis



Side learning point: (Full) anticoagulation in pregnancy is typically with LMWH

- May be in context of DVT, PE, AF, metallic heart valves etc.
- Low molecular weight heparins (dalteparin, enoxaparin, tinzaparin)
  - Direct oral anticoagulants and warfarin contraindicated
- Long-term treatment with heparins in pregnancy require monitoring :
  - anti-Factor Xa activity (for dosing)
  - platelets (for heparin-induced thrombocytopenia)

Prescribing Item

ID PWS304

This item is worth **10 marks**

You may use the BNF at any time

Case presentation

A 65 year old woman is admitted to the Surgical Ward as she has been vomiting for the last day, and has not been able to keep down any liquids. **PMH.** Previously resected colonic cancer 10 years ago. **DH.** Nil.

She has been diagnosed with small bowel obstruction, likely secondary to adhesions. While in the Emergency Department, she has received 500ml 0.9% sodium chloride infused intravenously over 10 minutes as she was then hypotensive.
She has had a nasogastric tube sited and is on free drainage with plans for regular aspiration. She is currently *nil by mouth*.

On examination (after fluid bolus)

BP 134/86 mmHg, pulse 88 regular, Sats 98% on air, No peripheral oedema.
Weight 70kg

Investigations

Na^+ 138 mmol/L (137–144), K^+ 3.4 mmol/L (3.5–4.9), Cr 110 µmol/L, eGFR 52 mL/min (previously >90), U 10.2 mmol/L (2.5–7.0)

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 (dd/mm/yyyy)	Start time (hh:mm)	Infusion solution					Medicine added		Prescriber's signature (including surname)	Given by
		Type/strength	Volume	Route	Rate	Duration	Approved name	Dose		

NICE National Institute for Health and Care Excellence

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Home > Treatment summary > Fluids and electrolytes

You are viewing BNF. If you require BNF for Children, use BNFC.

Fluids and electrolytes

Electrolyte replacement therapy

The electrolyte concentrations (intravenous fluid) table and the electrolyte content (gastro-intestinal secretions) table may be helpful in planning replacement electrolyte therapy; faeces, vomit, or aspiration should be saved and analysed where possible if abnormal losses are suspected.

Oral preparations for fluid and electrolyte imbalance

Sodium and potassium salts, may be given by mouth to prevent deficiencies or to treat established deficiencies of mild or moderate degree.

Oral potassium

Compensation for potassium loss is especially necessary:

- in those taking digoxin or anti-arrhythmic drugs, where potassium depletion may induce arrhythmias;

This section is not helpful for PSA

Related drugs

- ALBUMIN SOLUTION
- CALCIUM GLUCONATE
- FUROSEMIDE
- GELATIN
- GLUCOSE
- SODIUM
- SODIUM CHLORIDE WITH GLUCOSE

Related Treatment Summaries

- Diarrhoea (acute)

PWS – fluids (content)

- **Small minority usually choose 0.9% sodium chloride + 0.3% KCl (recommended answer)**

- Suboptimal answers

  0.9% sodium chloride + 0.15% KCl

  0.9% sodium chloride (no KCl)

  balanced solutions (Plasmalyte / Hartmanns / Ringers)

  glucose-based solution

PWS – fluids (volume)

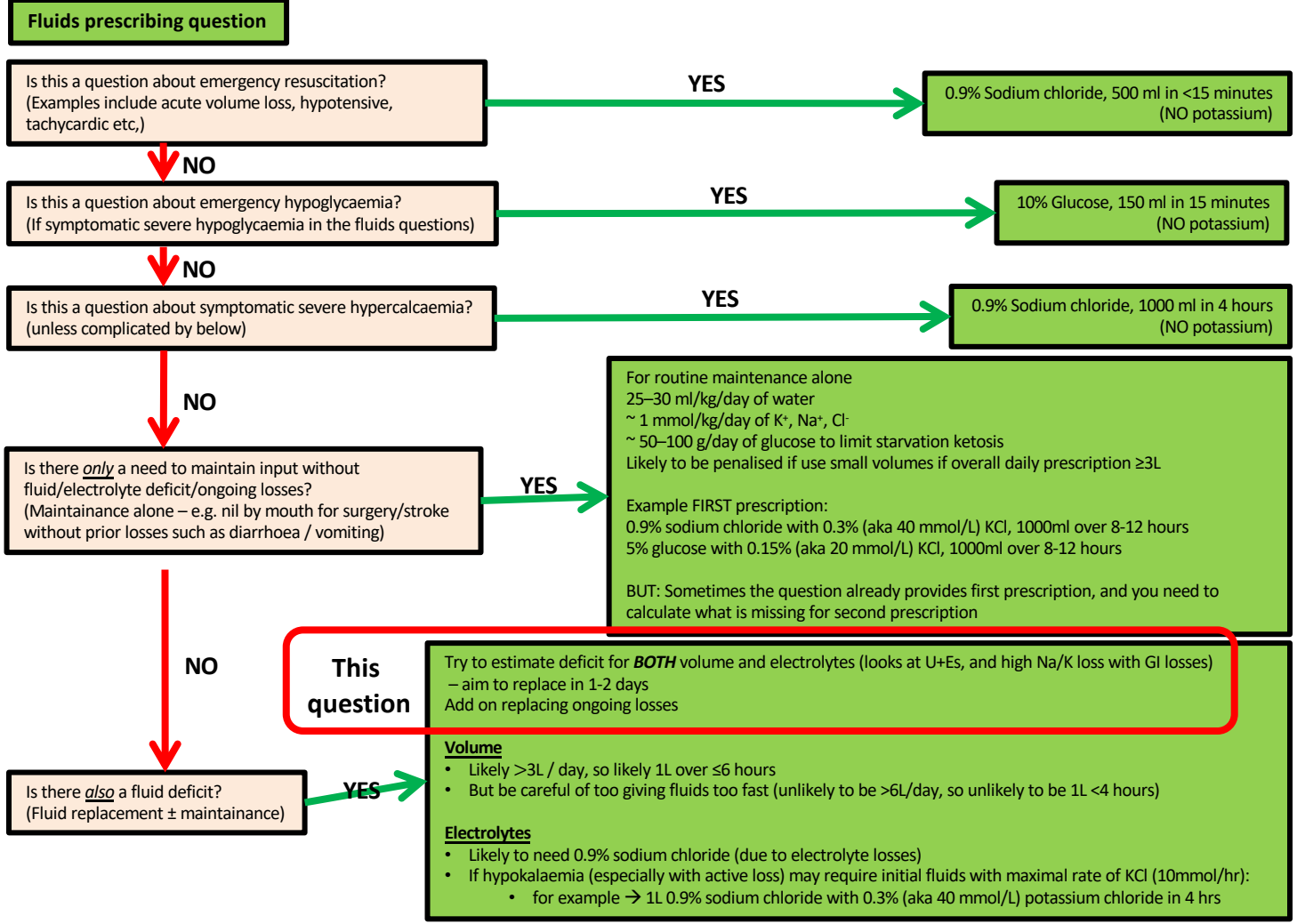
- **<u>Most choose 1 litre or 1000mL (recommended answer)</u>**

- Wrong options
  - This patient will need >3L/day, so anything less that 1L prescription would not be appropriate
  - NOTE: 2L is not a valid answer

PWS – fluids (rate)

- **<u>1L in 4 or 6 hours (recommended answer)</u>**

- Wrong answers
  - You have to specify the duration. “4-6 hours” is not a valid answer


Fluids prescribing question
Is this a question about emergency resuscitation?
(Examples include acute volume loss, hypotensive, tachycardic etc,)
YES
0.9% Sodium chloride, 500 ml in <15 minutes
(NO potassium)
NO
Is this a question about emergency hypoglycaemia?
(If symptomatic severe hypoglycaemia in the fluids questions)
YES
10% Glucose, 150 ml in 15 minutes
(NO potassium)
NO
Is this a question about symptomatic severe hypercalcaemia?
(unless complicated by below)
YES
0.9% Sodium chloride, 1000 ml in 4 hours
(NO potassium)
NO
Is there only a need to maintain input without fluid/electrolyte deficit/ongoing losses?
(Maintainance alone – e.g. nil by mouth for surgery/stroke without prior losses such as diarrhoea / vomiting)
YES
For routine maintenance alone
25–30 ml/kg/day of water
~ 1 mmol/kg/day of K+, Na+, Cl-
~ 50–100 g/day of glucose to limit starvation ketosis
Likely to be penalised if use small volumes if overall daily prescription ≥3L
Example FIRST prescription:
0.9% sodium chloride with 0.3% (aka 40 mmol/L) KCl, 1000ml over 8-12 hours
5% glucose with 0.15% (aka 20 mmol/L) KCl, 1000ml over 8-12 hours
BUT: Sometimes the question already provides first prescription, and you need to calculate what is missing for second prescription
NO
This question
Try to estimate deficit for BOTH volume and electrolytes (looks at U+Es, and high Na/K loss with GI losses)
– aim to replace in 1-2 days
Add on replacing ongoing losses
Is there also a fluid deficit?
(Fluid replacement ± maintainance)
YES
Volume
Likely >3L / day, so likely 1L over ≤6 hours
But be careful of too giving fluids too fast (unlikely to be >6L/day, so unlikely to be 1L <4 hours)
Electrolytes
Likely to need 0.9% sodium chloride (due to electrolyte losses)
If hypokalaemia (especially with active loss) may require initial fluids with maximal rate of KCl (10mmol/hr):
for example → 1L 0.9% sodium chloride with 0.3% (aka 40 mmol/L) potassium chloride in 4 hrs

Daily requirements are [NICE guidelines]:		Previous / ongoing losses	Recent prescription	Suggested prescription
25–30 ml/kg/d water	= 1750-2100mL water/day	No current intake + 1 day no intake AND ongoing GI loss = ?3L deficit	500ml	Will require around 4-6 litres over first day Therefore 1L over 4-6 hours
1 mmol/kg/day sodium, chloride	= 70 mmol/day	No current intake + 1 day no intake AND ongoing GI loss		Will require fairly large amounts of sodium/chloride over first 24 hours Therefore suggest that should have >130 mmol/L sodium in fluid (but see below re: potassium)
1 mmol/kg/day potassium	= 70 mmol/day	No current intake + 1 day no intake AND ongoing GI loss NOTE: Hypokalaemic		Will require fairly large amounts of sodium/chloride over first 24 hours Therefore suggest that should have 40mmol/L potassium - this means NOT Ringers/Hartmanns/Plasmalyte - Therefore will to have 0.9% sodium chloride with 0.3% potassium chloride • If giving 40mmol KCl, then cannot give it faster than 4 hours
50–100 g/day glucose (NB. glucose 5% contains 5 g/100ml)				Will need glucose at some point, but right now Na^+, Cl^- and K^+ may be more important
Likely to be penalised if use small volumes (e.g. <1L) if overall daily prescription ≥2L				
Consider → 0.9% sodium chloride with 0.3% potassium chloride over 4 (or maybe 6) hours				

Prescribing Item | ***Answer Page*** | ID: PWS30 4 | This question item is worth **10 marks** | You may use the BNF at any time

	A. Drug choice	Score	Feedback/justification		B. Dose, route, freq.	Score	Feedback/justification
1	0.9% sodium chloride + 0.3% KCl	5	Required sodium and potassium replacement		1L over 4 or 6 hours intravenously	5	Appropriate rate
					1L over 8 hours IV	2	Insufficient to replace (only maintain)
					1L over <4 hours IV	0	Dangerous rate of potassium
					1L over >8 hours IV	0	Insufficient to even maintain (and note even replace)
					Less than 1L (e.g. 500ml)	2	Patient WILL require more than 1L, so needs it prescribed. (Will be penalized, probably around 2 marks if available)
2	0.9% sodium chloride + 0.15% KCl	3	Insufficient potassium replacement		1L over 2-6 hours intravenously	2	Appropriate rate
					1L over 8 hours IV	0	Insufficient to replace (only maintain)
					1L over <2 hours IV	0	Dangerous rate of potassium
					1L over >8 hours IV	0	Insufficient to even maintain (and note even replace)
					Less than 1L (e.g. 500ml)	1	Patient WILL require more than 1L, so needs it prescribed. (Will be penalized, probably around 2 marks if available)
3	0.9% sodium chloride (No KCl)	0	Inappropriate in context of potassium				
4	Hartmann's, Ringers etc	0	Inappropriate in context of potassium				
5	5% dextrose OR 4% dextrose / 0.18% sodium chloride (regardless of KCl content)	0	Insufficient sodium content				

Prescribing Item

ID	PWS41 3

This question item is worth **10 marks**

You may use the BNF at any time

Case presentation
A 24-year-old woman attends her GP practice following with recurrent migraines which does not improve with avoiding triggers, improvement in lifestyle factors and use of as required paracetamol or aspirin/NSAIDs. **PMH**. Nil. **DH.** As required paracetamol, aspirin, ibuprofen. **SH.** <6 units of alcohol a week, non-smoker.

On examination
HR 74/min and regular, BP 132/69 mmHg.

After discussion, she would want to trial medications that could reduce the frequency of her migraines.

Please paste any picture or other illustration that supports the clinical case into this box

Pharmacy Stamp
Please don't stamp over age box

Age
34

Title, Forename, Surname & Address

Number of days' treatment
N.B. Ensure dose is stated

Endorsements

Drug name
Dose
Frequency

Signature of Prescriber (including surname)

Date (DD/MM/YYYY)

For Dispenser No. of Prescns. on form

FP10NC0105

Prescribing request
Write a prescription for ONE drug that will help reduce the frequency of her migraines.
(use the general practice prescription form provided)

PWS – Migraines

- **Most choose propranolol**
- **Most choose migraine dosing (start low)**
- **~half provided split doses**

- NOTE: You have to specify a dose (“80-240mg” is not a valid answer)
- NOTE: You have to specify a frequency (“in divided doses” is not a valid answer)

Prescribing Item | ***Answer Page*** | ID PWS41 3 | This question item is worth **10 marks** | You may use the BNF at any time

	A. Drug choice	Score	Feedback/justification		B. Dose, route, freq.	Score	Feedback/justification
1	Propranolol	5	Appropriate first line option without contraindications		40mg twice daily	5	Likely starting dose “80mg in divided doses”
					80mg once daily	4	Should be in divided dose
					80mg twice daily	3	Too high a starting dose
					80mg three times a day or 120mg twice daily	2	Very high starting dose
					<80mg total daily dose	1	Unlikely to be effective
2	Metoprolol	4	Licenced, but not typically first line		50mg twice daily	4	Starting dose of 100mg in divided doses
					100mg once daily	3	Should be in divided dose
					100mg twice daily	1	Should start at lower dose
3	Amitriptilline	3	Not first line		10 – 25 mg once nightly	3	Reasonable starting dose
					50 - 75 mg once daily	1	Too high a starting dose
					>75mg once daily	0	Very high starting dose
4	Topiramate	1	Not first line, not suitable for woman of childbearing age without highly effective contraception				
5	Paracetamol, aspirin, ibuprofen, NSAIDs, triptans	0	Used for acute attacks, where the patient is seeking prophylaxis				

Learning points

- Check question - whether to treat symptom or condition (or prophylaxis)

- Use first line and starter doses where not contraindicated
  - Be very careful when **PMH, DH, SH, Ex and Ix** may change your choices (not in this case)
  - Sometimes more expensive options of the same class may score lower (not in this case)
  - Use what you commonly see in clinical practice!

REV questions – General discussion

- Some people appear to take too much time with these questions
  - If you think you need to spend more than 2 minutes on each part of the question (A) and (B), then I would suggest moving on the further questions and returning when you have time later

Prescription Review Item

ID	REV01 7

This question item is worth **4 marks**

You may use the BNF at any time

Case presentation
A 57-year-old man with chronic obstructive pulmonary disease and hypertension was admitted to hospital with a moderate-severity community acquired pneumonia. **PMH.** COPD, depression, hypertension, nocturnal leg cramps. **DH.** His current regular medicines are listed (right).

Examination
BP 186/94 mmHg
ECG QTc 540 msec

Question A
Select the TWO prescriptions that are *most likely* to increase the risk of QT prolongation.
(*mark it with a tick in column A*).

Question B
Select the TWO prescriptions that are *most likely* to be contributing to his raised blood pressure.
(*mark them with a tick in column B*)

CURRENT PRESCRIPTIONS

Drug name	Dose	Route	Freq.	A	B
Amlodipine	10 mg	ORAL	daily		
Amoxicillin	500 mg	ORAL	8-hrly		
Amiloride	5 mg	ORAL	daily		
Beclometasone	200 micrograms	INH	12-hrly		
Clarithromycin	500 mg	ORAL	12-hrly	✓	
Ipratropium	40 micrograms	INH	8-hrly		
Prednisolone	40 mg	ORAL	daily		✓
Quinine	300 mg	ORAL	daily	✓	
Salmeterol	50 micrograms	INH	12-hrly		
Venlafaxine (modified release)	150 mg	ORAL	daily		✓

Answer box

Question A	Marks per correct tick	1
Clarithromycin and quinine both can increase QTc		
Question B	Marks per correct tick	1
Prednisolone and venlafaxine can increase blood pressure		

Discussion points

- Quinine had QT interval prolongation as “frequency unknown” side effect
  - BUT ALSO was a well known clinical side effect, and that there is further notice under “Important safety information” with notes for dose-dependent QT-interval-prolonging effects
- Clarithromycin had QT interval prolongation as “uncommon” side effect
- Venlafaxine had QT interval prolongation as “rare or very rare” side effect (**quite a few choose this**)

- Therefore for this question, quinine and clarithromycin is *more likely* than venlafaxine to cause QT prolongation

Summary – Risk of side effects (Hypertension)

- NOTE: These medications are NOT CONTRAINDICATED in hypertension, just needs better management/control
  - NSAIDs
  - Glucocorticoids
  - Mineralocorticoids (but usually as treatment for hypotension/insufficiency)

  - Combined oral contraceptives
  - Mirabegron

  - Clozapine
  - Venlafaxine / tricyclic antidepressants
  - Monoamine oxidase inhibtiors
  - Selegiline
  - Cyclosporine / tacrolimus / rapamycin

  - Many other rarer contributing medications

Prescription Review Item

ID REV01 0

This item is worth **2 marks**

You may use the BNF at any time

Case presentation
An 81-year-old man presents with worsening mobility related to Parkinson's disease. **PMH.** PD, psychotic depression, gastroparesis, previous Colles' fracture, GORD. **DH** see right

Question A
Select the TWO prescriptions that are most likely contributing to worsening symptoms of Parkinson's disease
(*mark them with a tick in column A*)

Question B
Select the ONE prescription that contains a dosing error
(*mark them with a tick in column B*)

CURRENT PRESCRIPTIONS

Drug name	Dose	Route	Freq.	A	B
Citalopram	20mg	ORAL	Daily		
Co-careldopa	25/100mg	ORAL	8-hrly		
Erythromycin	500mg	ORAL	8-hrly		
Gaviscon	10mL	ORAL	With meals		
Lansoprazole	30mg	ORAL	Daily		
Metoclopramide	10mg	ORAL	8-hrly	x	
Olanzapine	10mg	ORAL	Daily	x	
Risedronate	35mg	ORAL	Daily		

Answer box

Question A Marks per correct tick 1

Metoclopramide and olanzapine are both anti-dopamine drugs. In theory, domperidone is a better option for nausea as does not cross BBB

Question B Marks per correct tick 1

Risedronate dose is weekly [or 5mg daily].

Medications used with caution (or contraindicated) in Parkinson's Disease

- The following is a non-exhaustive list:
- Mainly:
  - Haloperidol and antipsychotic drugs in general
    - (NOTE: although the BNF has a smaller list, typically you would avoid antipsychotic drugs with Lewy Body dementia)
  - Metoclopramide
- Also risks for acute dystonic reactions
  - Antipsychotic drugs (especially haloperidol)
  - Metoclopramide
  - Domperidone
  - Cyclizine

Medications and timings

- Non-exhaustive list of meds that require specific timings

Broad categories	Medications
Relating to activity / daytime	• Medications for Parkinson's disease • Anticholinesterases for myasthenia gravis • Diuretics • Steroids
Relating to night time	• Night sedation • Less crucially, statins
Relating to other medications / empty stomach	• Bisphosphonates • Antacids • Levothyroxine
Relating to mealtimes	• Hypoglycaemics (know your insulin types!) • Pancreatic enzymes
Relating to days of the week	• Patches • Bisphosphonates • Methotrexate/folic acid

Prescription Review Item | ID REV01 3 | This item is worth **2 marks** | You may use the BNF at any time

Case presentation
A 40-year-old man is being reviewed in anaesthetic pre-assessment clinic to review fitness for fitting a spinal cord stimulator under GA for chronic back pain. **PMH.** Liver cirrhosis secondary to Hepatitis C, osteoarthritis, portal hypertension, previous variceal bleeds, depression **DH.** Listed on table.

Examination
Pulse 80/min regular; BP 112/72 mmHg; RR 14/min; oxygen sats 97% RA; GCS 15/15

Question A
Select the TWO prescriptions where the dose should be altered or stopped entirely in this patient.
(*mark them with a tick in column A*)

Question B
Select ONE prescription that reduces the risk of encephalopathy
(*mark them with a tick in column B*)

CURRENT PRESCRIPTIONS

Drug name	Dose	Route	Freq.	A	B
Gabapentin	300 mg	ORAL	8-hrly		
Morphine M/R	40 mg	ORAL	12-hrly	x	
Multivitamins	1 tab	ORAL	Daily		
Naproxen	250 mg	ORAL	6-hrly	x	
Propanolol M/R	80 mg	ORAL	Daily		
Rifaximin	550 mg	ORAL	12-hrly		
Sertraline	100 mg	ORAL	Daily		

Answer box

Question A	Marks per correct tick	1
Naproxen is an NSAID that predisposes to GI bleeding which should be avoided in a patient with high risk of GI bleeding [cirrhosis with varices] Opiates should be used with caution in patient with hepatic cirrhosis Paracetamol should be dosed at maximum 2g/day for chronic use in patients with advanced liver disease		
Question B	Marks per correct tick	2

Patient with hepatic dysfunction

- BNF not usually helpful.
- Guidance often describes “mild / moderate / severe” impairment.
- Clinical judgement and experience is important.

- Be aware of medications that can result in:
  - Further hepatotoxicity
  - Drowsiness / sedation (this question → morphine)
  - Bleeding (this question → naproxen)
  - Renal impairment / dehydration
  - Constipation

  - But this is context-specific
    - Especially as “acute liver bundle” can also include diuretics, prophylactic LMWH, antibiotics

Prescription Review Item | ID REV01 5 | This item is worth **2 marks** | You may use the BNF at any time

Case presentation
A 70-year-old man attends his community day hospital for a multi-morbidity check up. He does has not had any syncopal or pre-syncopal episodes or any other symptoms suggestive of hypotension and hypoglycaemia. He mentions that his exercise tolerance is not as good as a year ago, now needing to rest after 200 meters. **PMH.** Type II Diabetes, severe hypertensive heart failure, gout, CKD stage 4. **DH.** Listed on table.

Examination
BP 148/92 mmHg, pulse 88/min regular. Chest clear, no peripheral oedema

Investigations.
Na^+ 141 mmol/L (137–144), K^+ 4.1 mmol/L (3.5–4.9)
eGFR 28 mL/min; previous eGFR 26 a year ago mL/min (>60)
HbA1c 41mmol/mol (20–42)
Serum cholesterol mmol/L 4.1 (<5.2), serum LDL cholesterol 3.1 mmol/L (<3.36), serum HDL cholesterol 1.0 mmol/L (>1.55)

Question A
Select the TWO prescriptions that should be stopped at this review.
(*mark them with a tick in column A*)

Question B
Select the TWO prescriptions may need dose uptitration at this review.
(*mark them with a tick in column B*)

CURRENT PRESCRIPTIONS

Drug name	Dose	Route	Freq.	A	B
Allopurinol	100 mg	ORAL	Daily		
Amlodipine	2.5mg	ORAL	Daily		
Atorvastatin	20 mg	ORAL	Daily		
Bisoprolol	2.5 mg	ORAL	Daily		
Diclofenac	50 mg	ORAL	8-hrly	x	
Furosemide	40mg	ORAL	Daily		
Metformin	500 mg	ORAL	With meals	x	
Paracetamol	1 g	ORAL	6-hrly		
Ramipril	2.5 mg	ORAL	Daily		

Answer box

Question A Marks per correct tick 1

Metformin can cause lactic acidosis in patients with significant CKD – it is advised to stop when GFr is <30 mL/min
Diclofenac is an NSAID that can lead to kidney damage and fluid retention, possibly worsening heart failure.

Question B Marks per correct tick 1

With his severe heart failure, he should have maximally tolerated doses of ACEi/ARB and bisoprolol. Although his renal function is poor, he can still have Ramipril 5mg od. His heart rate does not suggest he is fully beta-blocked, and can be uptitrated until heart rate is around 60. These will take priority over other methods of controlling his BP (such as amlodipine)
His HbA1c and cholesterol profile (although cholesterol is now mainly based on changes in non-HDL cholesterol) does not indicate uptitration

(Question A) Recognise difference between nephrotoxic vs. renally-cleared

- **KEY MESSAGE –** Need to recognise the difference between medications that
  - Require dose adjustments / cessation with reduced renal function
    - The aim of this question
    - E.g. metformin, NSAID in this question
  - May <u>cause</u> a reduction in renal function
    - See next slide
  - 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
    - ACEi/ARBs/mineralocorticoid antagonists
    - NSAIDs
    - Aspirin and paracetamol in overdose
    - Statins and fibrates (with rhabdomyolysis)
    - Anti-infectives (rarely when oral)
      - Aminoglycosides such as gentamicin
      - Vancomycin
      - Some penicillins and cephalosporins
      - Intravenous anti-fungals such as amphotericin B
      - Certain intravenous antivirals such as acyclovir
    - Radiocontrast agents
    - Lithium in overdose
    - Certain immunosupressants and chemotherapy
  - Of course, not all AKIs are drug-related

(Question B) Medical Mx of chronic heart failure (with reduced LV systolic function) – 1/2

- Priorities for improving prognosis, and for symptomatic relief

Patient characteristics	Medications improving *prognosis*	Notes
Symptomatic heart failure with reduced ejection fraction (typically LVEF<40%)	ACE-inhibitor	Uptitrate to maximally tolerated dose Angiotensin receptor blockade as ACEi alternative
	Beta-blockers	Uptitrate to maximally tolerated dose (not bradycardic)
If still symptomatic, and LVEF <35%	Add mineralocorticoid antagonist (e.g. spiro 25 mg) Consider switch ACEi to Entresto and adding SGLT2i	If renal function and serum potassium allows
If ACEi not tolerated due to renal dysfunction or hyperkalaemia	Consider isosorbide dinitrate + hydralazine combination	[Specialist care]

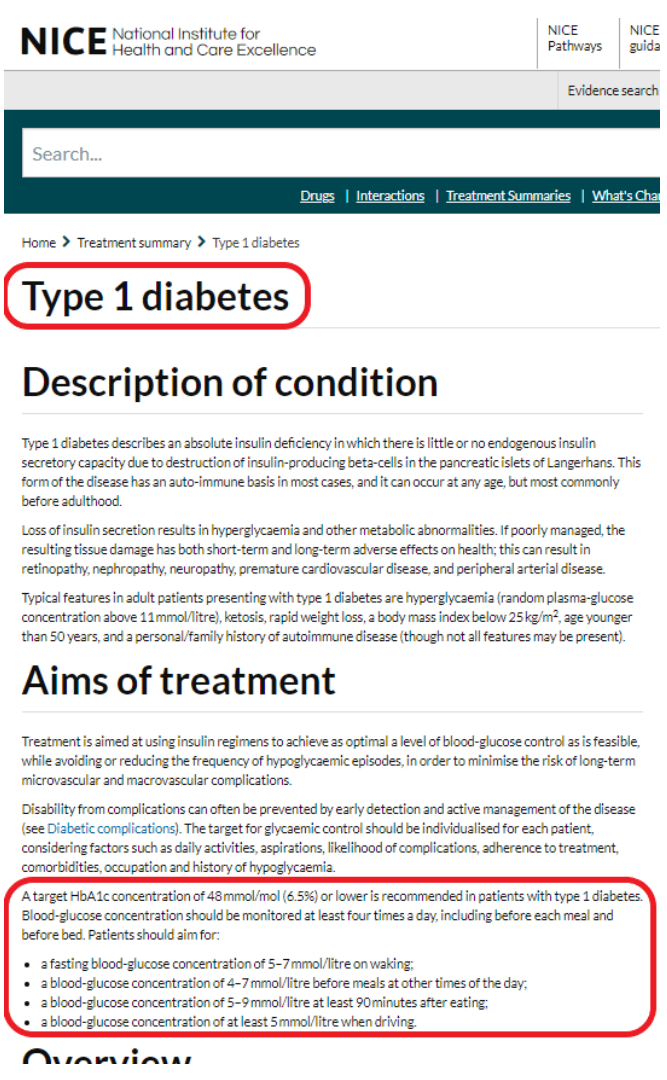
(Question B) Medical Mx of chronic heart failure (with reduced LV systolic function) – 2/2

- For **symptom** management (no prognostic effect)
  - Diuretics - typically **loop diuretic**
    - Although sometimes ± thiazide-like [specialist care]
  - If severe LV dysfunction, and already on full therapy above, consider digoxin [specialist care]

- Other treatment not discussed here [specialist care]
  - Ivabradine, implanted cardiac defibrillator and cardiac resynchronisation therapy not discussed here

HbA1c targets

- Type 1 diabetes
  - Target HbA1c concentration of 48 mmol/mol
  - Capillary glucose targets also available



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Evidence search

Search...

Drugs | Interactions | Treatment Summaries | What's Cha

Home > Treatment summary > Type 1 diabetes

Type 1 diabetes

Description of condition

Type 1 diabetes describes an absolute insulin deficiency in which there is little or no endogenous insulin secretory capacity due to destruction of insulin-producing beta-cells in the pancreatic islets of Langerhans. This form of the disease has an auto-immune basis in most cases, and it can occur at any age, but most commonly before adulthood.

Loss of insulin secretion results in hyperglycaemia and other metabolic abnormalities. If poorly managed, the resulting tissue damage has both short-term and long-term adverse effects on health; this can result in retinopathy, nephropathy, neuropathy, premature cardiovascular disease, and peripheral arterial disease.

Typical features in adult patients presenting with type 1 diabetes are hyperglycaemia (random plasma-glucose concentration above 11 mmol/litre), ketosis, rapid weight loss, a body mass index below 25 kg/m^2, age younger than 50 years, and a personal/family history of autoimmune disease (though not all features may be present).

Aims of treatment

Treatment is aimed at using insulin regimens to achieve as optimal a level of blood-glucose control as is feasible, while avoiding or reducing the frequency of hypoglycaemic episodes, in order to minimise the risk of long-term microvascular and macrovascular complications.

Disability from complications can often be prevented by early detection and active management of the disease (see Diabetic complications). The target for glycaemic control should be individualised for each patient, considering factors such as daily activities, aspirations, likelihood of complications, adherence to treatment, comorbidities, occupation and history of hypoglycaemia.

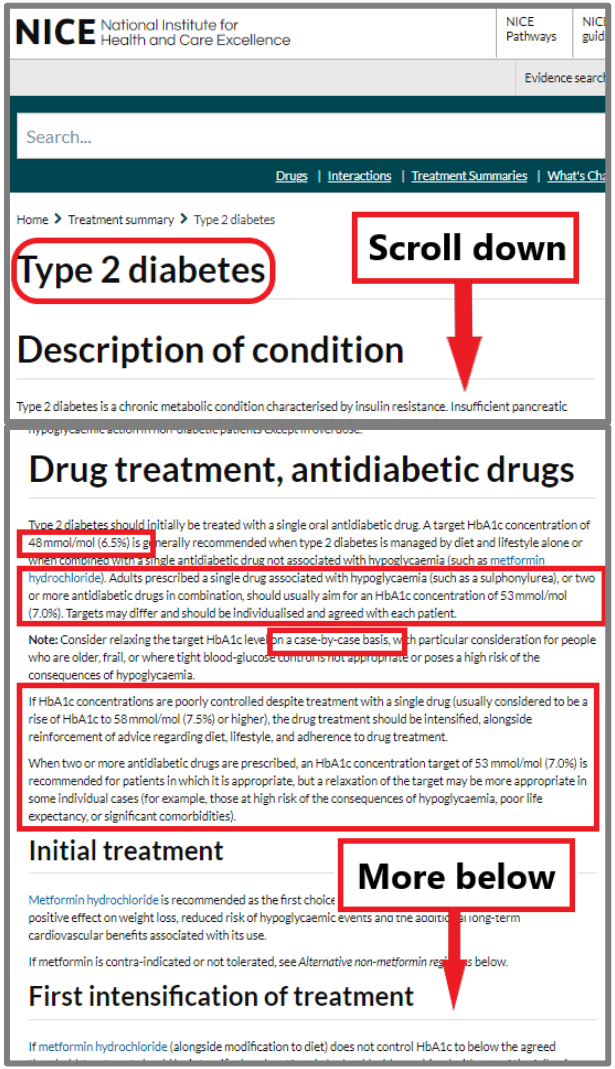
A target HbA1c concentration of 48 mmol/mol (6.5%) or lower is recommended in patients with type 1 diabetes. Blood-glucose concentration should be monitored at least four times a day, including before each meal and before bed. Patients should aim for:

- a fasting blood-glucose concentration of 5–7 mmol/litre on waking;
- a blood-glucose concentration of 4–7 mmol/litre before meals at other times of the day;
- a blood-glucose concentration of 5–9 mmol/litre at least 90 minutes after eating;
- a blood-glucose concentration of at least 5 mmol/litre when driving.

Overview

HbA1c targets

- Type 2 diabetes
  - Diet controlled or metformin alone → target HbA1c 48 mmol/mol
  - Single drug associated with hypoglycaemia (such as a sulphonylurea), or two or more antidiabetic drugs in combination → target HbA1c 53 mmol/mol
  - Targets may differ and should be individualised and agreed with each patient
    - for people who are older, frail, or
    - where tight glucose control is not appropriate or high risk of consequences hypoglycaemia



Case presentation
A 34-year-old woman attends primary care complaining of vaginal discharge. **PMH.** nil **DH.** Nil

Examination
Thin white vaginal discharge with fishy smell

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

MANAGEMENT OPTIONS

A	Aciclovir 200mg 5-times a day orally
B	Benzathine penicillin G 2.4MU intramuscularly as single dose
C	Clotrimazole pessary 200 mg PV nightly
D	Fluconazole 150mg orally every three days
E	Metronidazole 2 g orally as single dose

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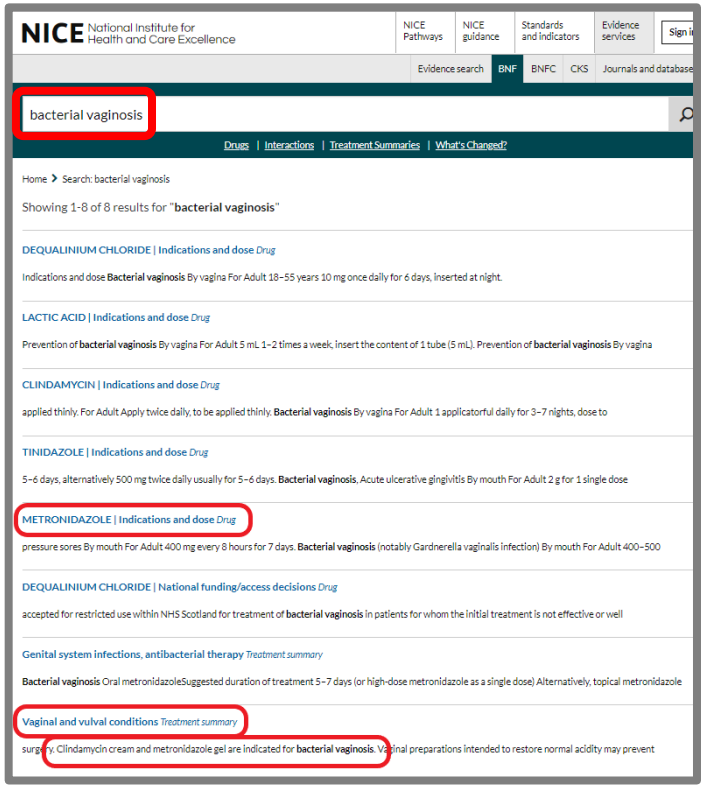
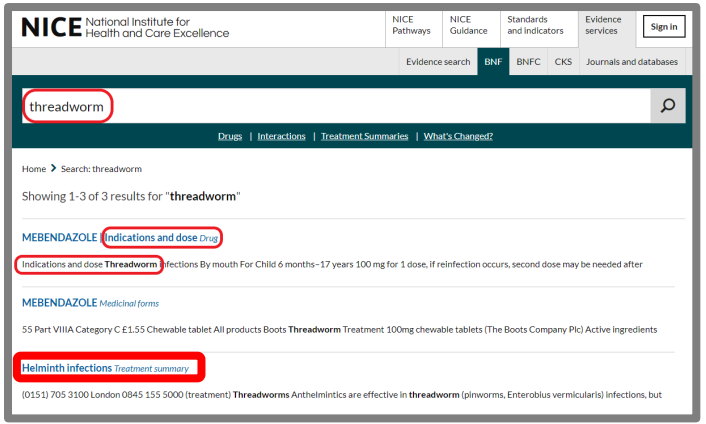
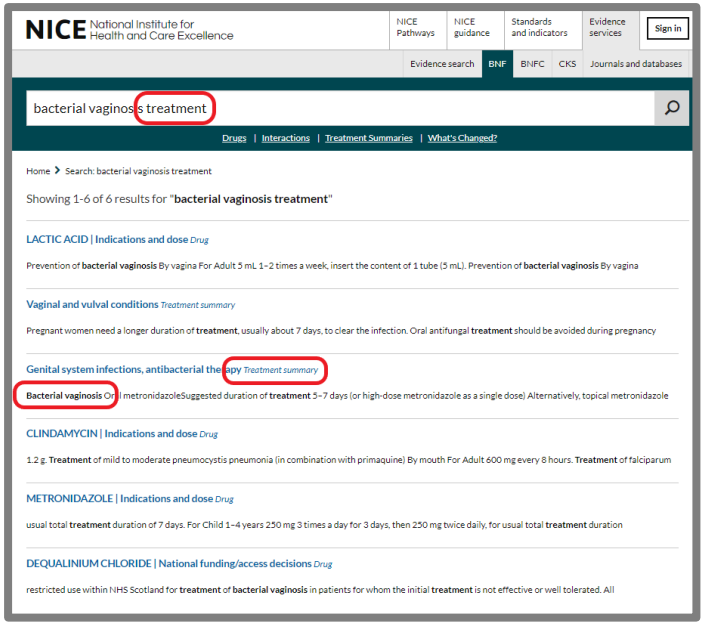
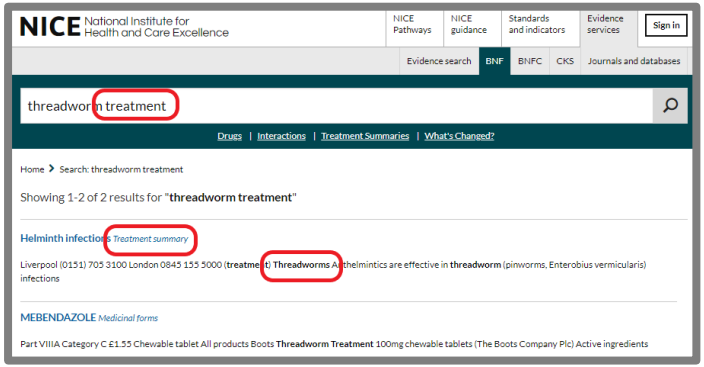




- Doesn't always work
  - It does not appear in order of importance / relevance
  - Sometimes the BNF terms are not very precise and might not be what you are searching for
  - Be careful to know what you are treating. If you searched for "*pruritus ani*", you would end up with the answer of topical steroids





- Alternatively, add “treatment” to your search term and you get the appropriate “Treatment Summary” higher up your search results

Planning Management Item

ID MAN013

This item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 4-year-old with *pruritus ani* is diagnosed clinically with threadworm infection **PMH.** nil **DH.** Nil

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

MANAGEMENT OPTIONS

A	Albendazole orally 400 mg orally as single dose
B	Dermol 500 topically 8-hrly
C	Hand hygiene advice
D	Mebendazole orally 100 mg orally as single dose
E	Topical hydrocortisone 0.1% cream topically 1 spray 8-hrly

Answer box

Option A Justification

This is an anti-helminthic agent, but is recommended for hookworms / strongyloides / hydatid disease, but not threadworm

Option B Justification

May be required if excoriated

Option C Justification

Important but will not clear infection on own

Option D Justification

Treatment of choice for threadworm infection

Option E Justification

Can be used for pruritus ani, particularly for haemorrhoids

Planning Management Item | ID | MAN032 | This item is worth **2 marks** | You may use the BNF at any time | BNF

Case presentation
A 21-year old woman is being reviewed by a rural General Practitioner as a home visit on the request of her housemate. She is complaining of headaches and insisting the light should be switched off. **PMH**. None. **DH.** None.

On examination
Confused and disorientated.
Temperature 38.9°C, HR 112/min and regular, BP 114/64 mmHg, , RR 22/min, O_2 sat 97% on air, HS normal, chest sounds clear.
Weight 60kg.

There will be a delay in getting her to a hospital.

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

MANAGEMENT OPTIONS

A	Benzylpenicillin 1.2g intramuscularly	x
B	Cefotaxime 2g intramuscularly	
C	Ceftriaxone 2g intramuscularly	
D	Gentamicin 180mg intramuscularly	
E	Vancomycin 1g intramuscularly	

Answer box

Option A Justification

In situations with delayed transfer to hospital, intramuscular benzylpenicillin would be first-line treatment for suspected bacterial meningitis

Option B Justification

INTRAVENOUS cefotaxime or ceftriaxone are first line treatment IN HOSPITAL

Option C Justification

INTRAVENOUS cefotaxime or ceftriaxone are first line treatment IN HOSPITAL

Option D Justification

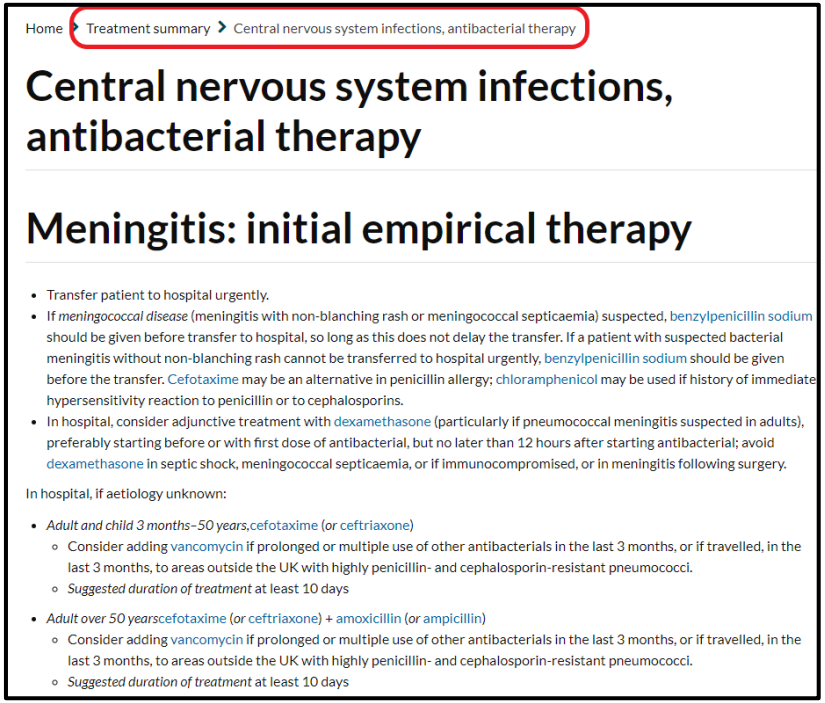
Although gentamicin may have a role in managing bacterial meningitis, this is usually limited to specific organisms, and not for first-line broad cover

Option E Justification

Vancomycin on its own is not suitable for treatment of suspected

Recognise the difference for:

- In-community vs in-hospital
- Penicillin-allergy
- Cephalosporin-allergy
- If infective organism known



Home › Treatment summary › Central nervous system infections, antibacterial therapy

Central nervous system infections, antibacterial therapy

Meningitis: initial empirical therapy

- Transfer patient to hospital urgently.
- If *meningococcal disease* (meningitis with non-blanching rash or meningococcal septicaemia) suspected, benzylpenicillin sodium should be given before transfer to hospital, so long as this does not delay the transfer. If a patient with suspected bacterial meningitis without non-blanching rash cannot be transferred to hospital urgently, benzylpenicillin sodium should be given before the transfer. Cefotaxime may be an alternative in penicillin allergy; chloramphenicol may be used if history of immediate hypersensitivity reaction to penicillin or to cephalosporins.
- In hospital, consider adjunctive treatment with dexamethasone (particularly if pneumococcal meningitis suspected in adults), preferably starting before or with first dose of antibacterial, but no later than 12 hours after starting antibacterial; avoid dexamethasone in septic shock, meningococcal septicaemia, or if immunocompromised, or in meningitis following surgery.

In hospital, if aetiology unknown:

- *Adult and child 3 months–50 years*,cefotaxime (*or* ceftriaxone)
  - Consider adding vancomycin if prolonged or multiple use of other antibacterials in the last 3 months, or if travelled, in the last 3 months, to areas outside the UK with highly penicillin- and cephalosporin-resistant pneumococci.
  - *Suggested duration of treatment* at least 10 days
- *Adult over 50 years*cefotaxime (*or* ceftriaxone) + amoxicillin (*or* ampicillin)
  - Consider adding vancomycin if prolonged or multiple use of other antibacterials in the last 3 months, or if travelled, in the last 3 months, to areas outside the UK with highly penicillin- and cephalosporin-resistant pneumococci.
  - *Suggested duration of treatment* at least 10 days

Planning Management Item

ID MAN036

This item is worth **2 marks**

You may use the BNF at any time

Case presentation

An 18 year old man with type I diabetes mellitus was admitted with diarrhoea and vomiting, and required treatment with a variable rate intravenous insulin infusion (VRIII) and intravenous fluids, while his normal insulin was witheld. After three days in hospital he was eating and drinking normally. There were no ketones in his urine. **PMH.** Type I diabetes mellitus. **DH.** His normal insulin prescription was 15 units of Novomix 30 twice daily (breakfast and evening meal).

In the last 24 hours, he required 30 units of actrapid, via VRIII, to control his blood sugars adequately.

At the ward round (at 11am), the plan is to reinstate subcutaneous insulin therapy (and cease the variable rate insulin infusion). He has already had breakfast at 8am, is due lunch at 1pm, and evening meal at 6pm

Question

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

MANAGEMENT OPTIONS

A	Give 15 units Novomix 30 with evening meal and stop VRIII at same time	
B	Give 15 units Novomix 30 with evening meal and stop VRIII at tomorrow's breakfast	
C	Give 15 units Novomix 30 with evening meal and stop VRIII 30 minutes later	x
D	Give 15 units Novomix 30 with lunch and stop VRIII at same time	
E	Stop VRIII at lunch, and give 15 units Novomix 30 with evening meal	

Converting from insulin infusion to subcutaneous biphasic insulin

- The onset of action of NovoMix 30 occurs within 10-20 minutes of subcutaneous injection. The maximum effect is exerted between 1 and 4 hours after injection.
- Soluble IV insulin has a half-life of around 10 minutes.
- Therefore there still ideally needs to be an infusion while the NovoMix is absorbed.

- **PLAN**
  - VRIII should be stopped at breakfast or evening meal only (not at midday meal)
  - Administer usual dose of mixed insulin.
  - Allow patient to eat meal as normal.
  - Stop intravenous insulin infusion 30 minutes later.

Communicating Information Item

ID	COM006

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 64-year old man is being seen in Pain Clinic with neuropathic pain. Simple and opioid analgesia has not been beneficial for him. He has been prescribed gabapentin starting at 300 mg once daily, but being uptitrated to 300 mg 8hrly before his next review.

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

INFORMATION OPTIONS

A	If gabapentin causes dyspepsia, it should be taken together with antacids	
B	If a dose is missed, the patient should take the doubled dose the next time.	
C	Gabapentin therapy can be stopped abruptly	
D	Most side effects are mild, and may subside over several days	x
E	The full beneficial effect of gabapentin often occurs within three doses	

Answer box

Option A Justification

Antacids will reduce the absorption of gabapentin. If antacids are prescribed, gabapentin should be taken 2 hours after the antacid

Option B Justification

It is rare that a doubled dose is recommended. It is not the case with gabapentin, particularly with dose-dependent effects of drowsiness

Option C Justification

Stopping gabapentin therapy abruptly could lead to withdrawal symptoms

Option D Justification

This is true for gabapentin, and would be worth informing the patient to attempt to persist for the first few days as most side effects would be mild and improves with time.

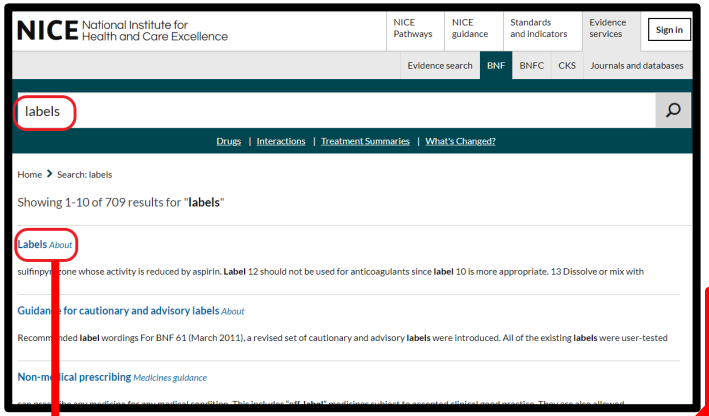
Option E Justification

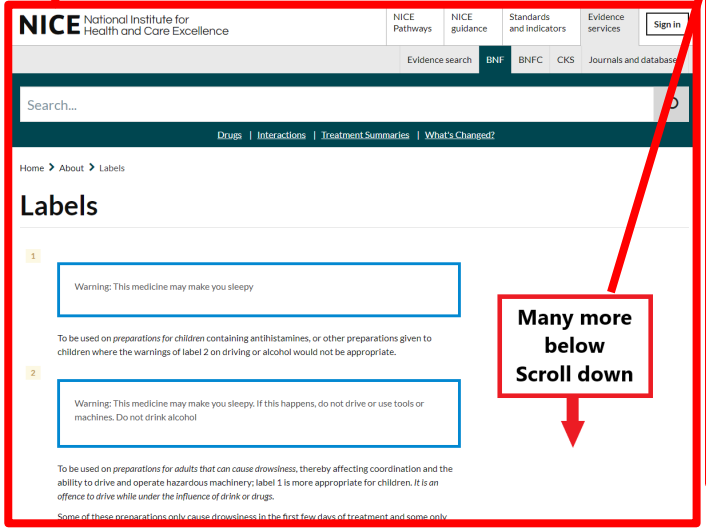
Antacids and PPIs/H_2RAs

- Antacids can reduce absorption of many drugs
  - Typically, a time-interval of 2 hours should be considered between antacid intake and the administration of other oral medicinal products
  - Others may recommend an even higher time-interval

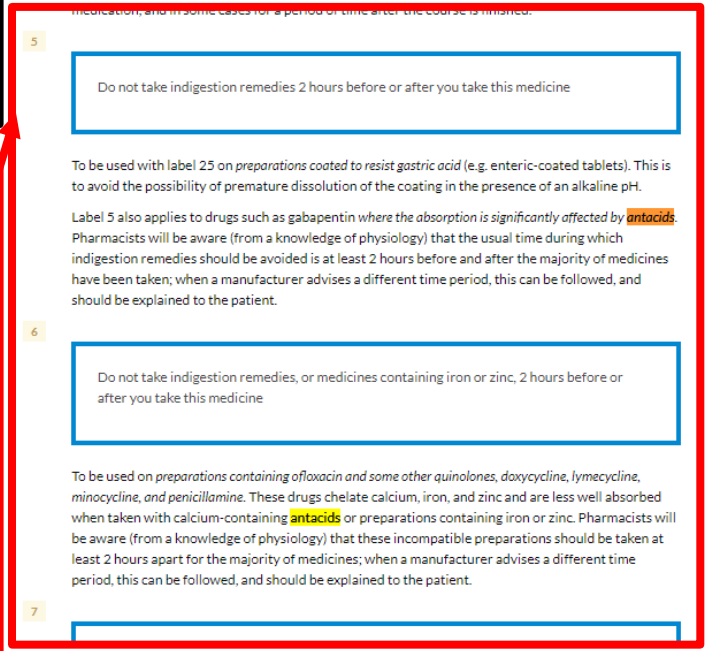
- PPIs/H_2RAs alter gastric pH, and can theoretically alter drug absorption

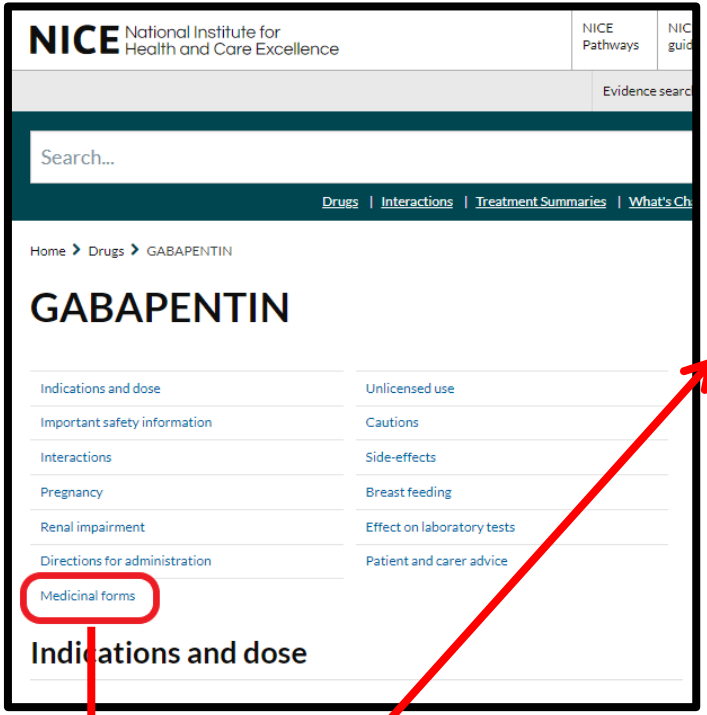
Antacids and absorption [BNF Labels 5+6]





Many more below Scroll down

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Evidence searc
Search...
Drugs | Interactions | Treatment Summaries | What's Ch
Home › Drugs › GABAPENTIN
GABAPENTIN
Indications and dose
Unlicensed use
Important safety information
Cautions
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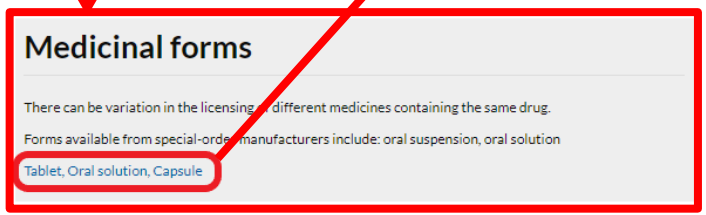
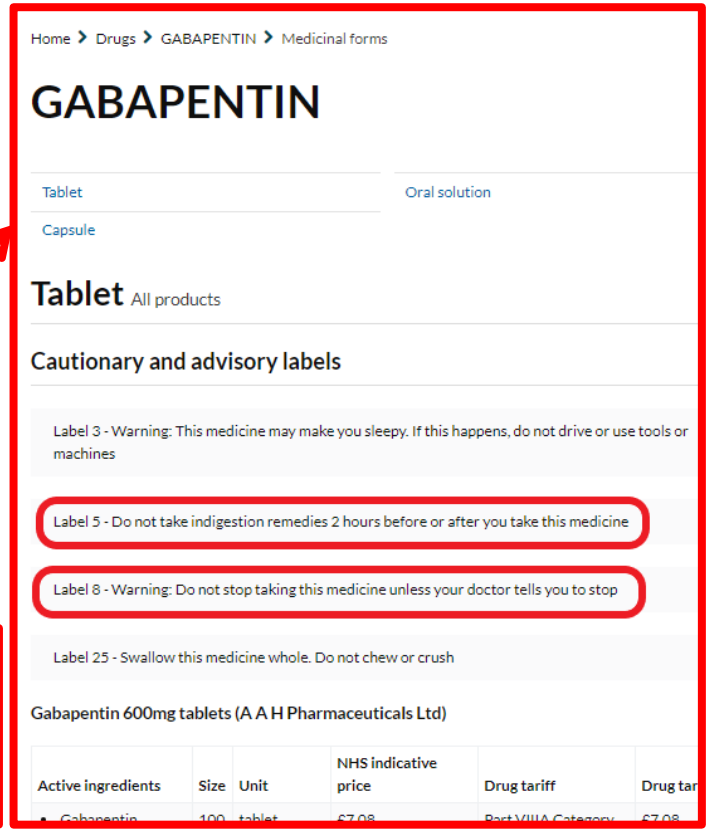
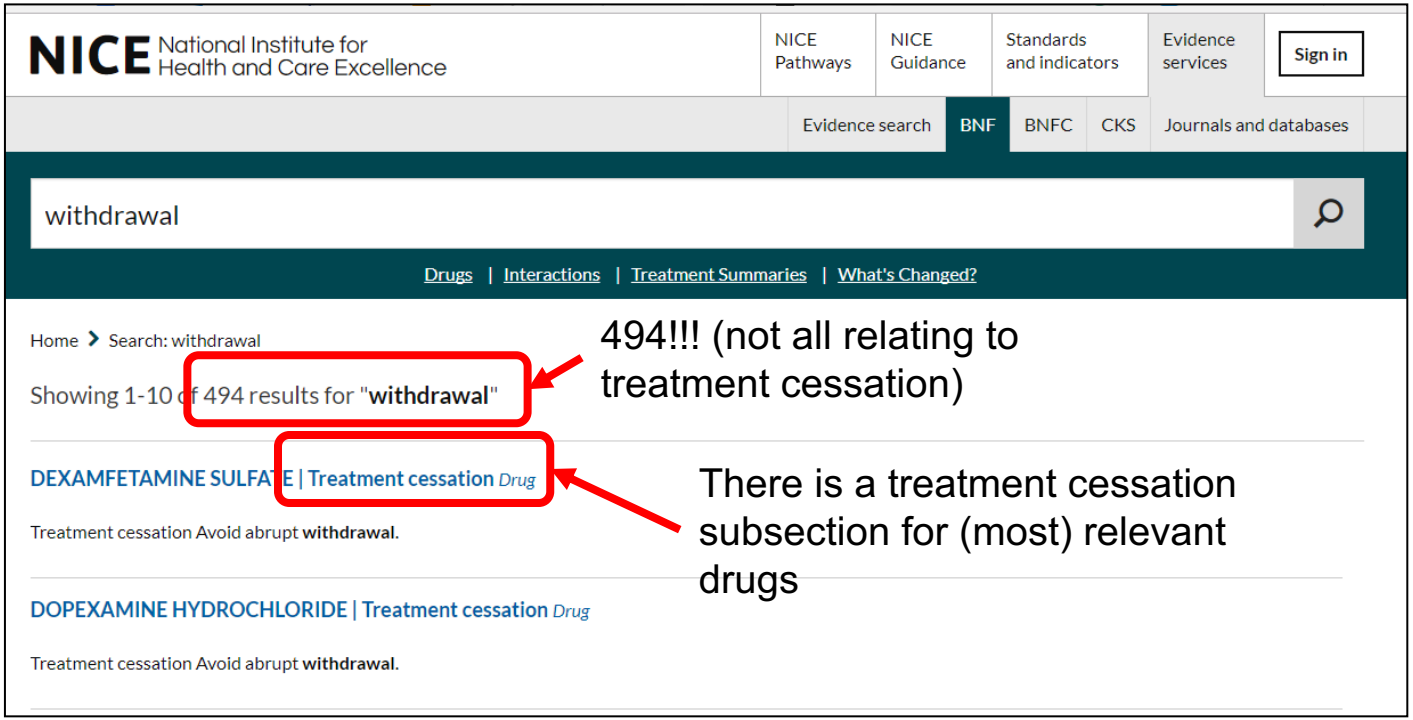
Pregnancy
Breast feeding
Renal impairment
Effect on laboratory tests
Directions for administration
Patient and carer advice
Medicinal forms
Indications and dose


Medicinal forms
There can be variation in the licensing of different medicines containing the same drug.
Forms available from special-order manufacturers include: oral suspension, oral solution
Tablet, Oral solution, Capsule


Home › Drugs › GABAPENTIN › Medicinal forms
GABAPENTIN
Tablet
Oral solution
Capsule
Tablet All products
Cautionary and advisory labels
Label 3 - Warning: This medicine may make you sleepy. If this happens, do not drive or use tools or machines
Label 5 - Do not take indigestion remedies 2 hours before or after you take this medicine
Label 8 - Warning: Do not stop taking this medicine unless your doctor tells you to stop
Label 25 - Swallow this medicine whole. Do not chew or crush
Gabapentin 600mg tablets (A A H Pharmaceuticals Ltd)
Active ingredients
Size
Unit
NHS indicative price
Drug tariff
Drug tar
Gabapentin
100
tablet
£7.08
Part VIIIA Category
£7.08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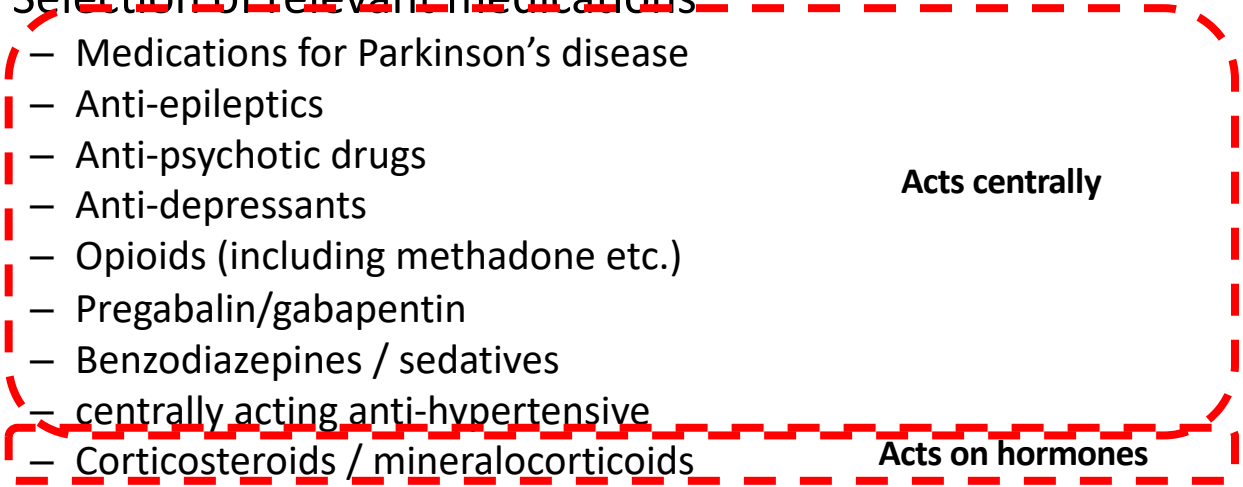
Journals and databases
withdrawal
Drugs | Interactions | Treatment Summaries | What's Changed?
Home › Search: withdrawal
Showing 1-10 of 494 results for "withdrawal"
494!!! (not all relating to treatment cessation)
DEXAMFETAMINE SULFATE | Treatment cessation Drug
Treatment cessation Avoid abrupt withdrawal.
There is a treatment cessation subsection for (most) relevant drugs
DOPEXAMINE HYDROCHLORIDE | Treatment cessation Drug
Treatment cessation Avoid abrupt withdrawal.

Withdrawal symptoms with abrupt cessation of long-term medications

- Selection of relevant medications
  - Medications for Parkinson's disease
  - Anti-epileptics
  - Anti-psychotic drugs
  - Anti-depressants
  - Opioids (including methadone etc.)
  - Pregabalin/gabapentin
  - Benzodiazepines / sedatives
  - centrally acting anti-hypertensive
  - Corticosteroids / mineralocorticoids
  - Nitrates for angina
  - Beta-blockers in ischaemic heart disease
  - Certain asthma drugs – necrodomil / cromoglycate
  - Antispasmodics – such as baclofen
  - Lithium



Communicating Information Item

ID COM019

This question item is worth **2 marks**

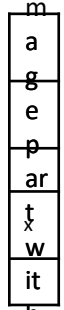
You may use the BNF at any time

Case presentation
A 32-year old woman is reviewed in the Sexual Health Clinic, reporting that she is an asymptomatic sexual contact with infectious syphilis. She is prescribed doxycycline 100 mg orally twice daily for 14 days.

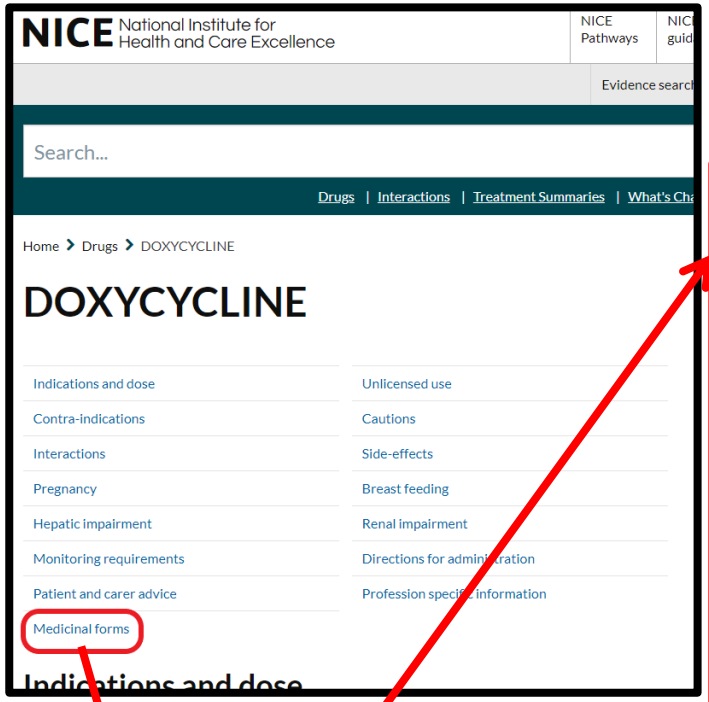
Question
Select the *most appropriate* information option that should be communicated to the patient.
(*mark it with a tick*)

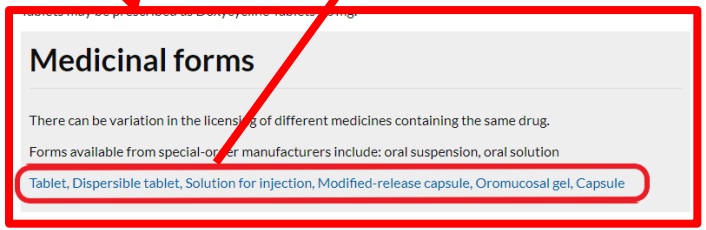
INFORMATION OPTIONS

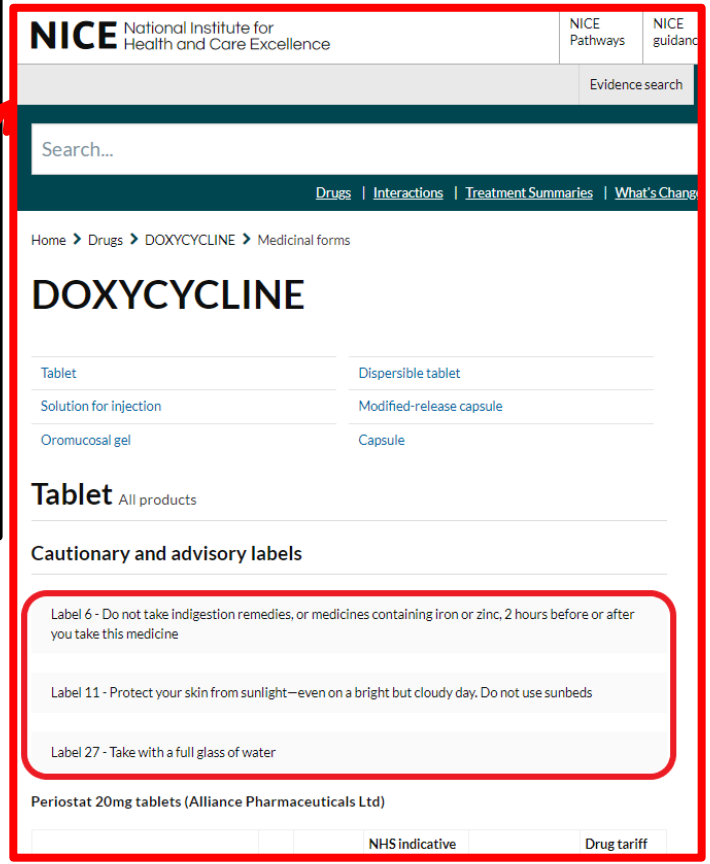
A	She should not take alcohol during the course of treatment
B	She should not take milk 2 hours before or after taking the medication
C	She should not drive or use heavy tools / machinery
D	She should protect her skin from sunlight, even on a bright but cloudy day
E	This medicine may colour her urine, but is harmless



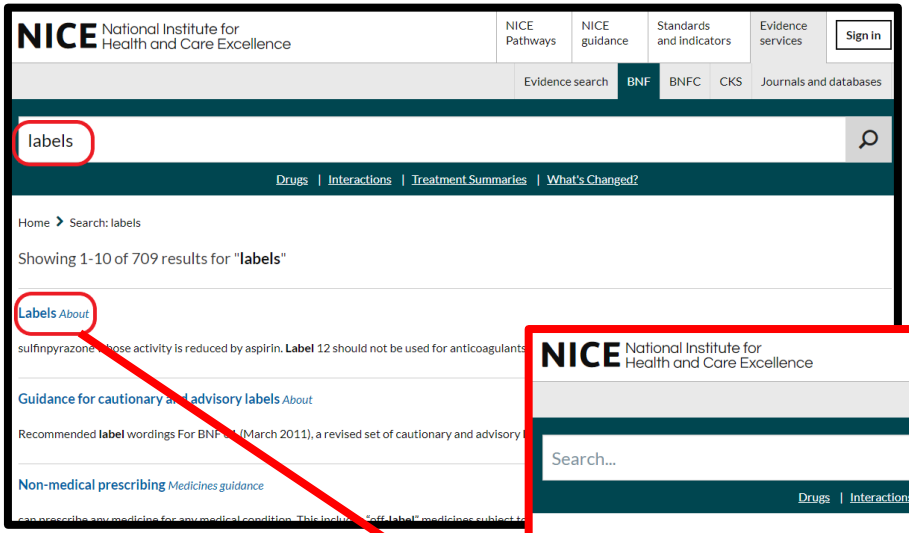
Labels

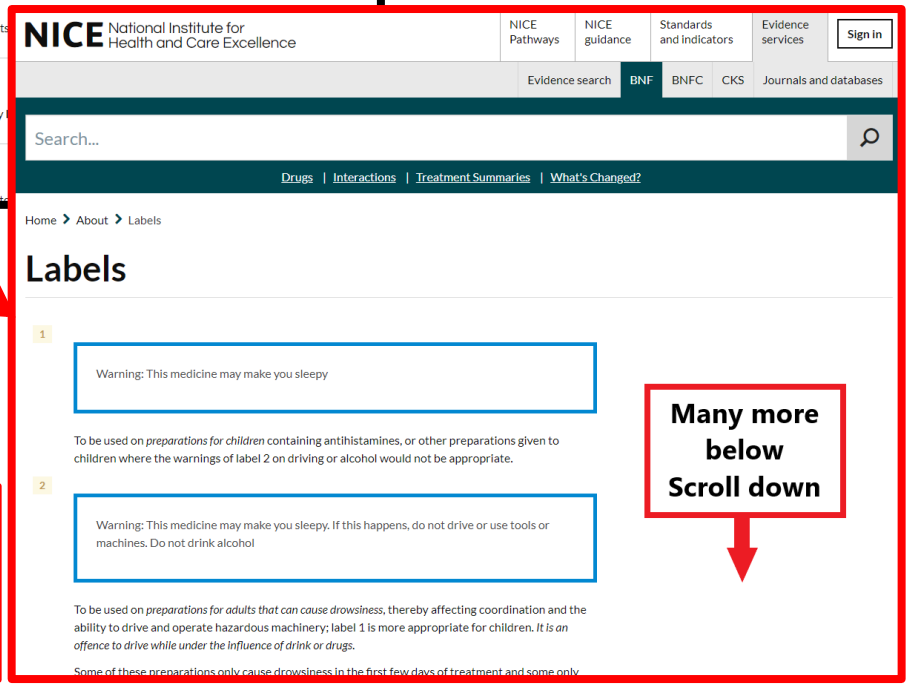

NICE National Institute for Health and Care Excellence
NICE Pathways
Evidence search
Search...
Drugs | Interactions | Treatment Summaries
Home > Drugs > DOXYCYCLINE
DOXYCYCLINE
Indications and dose
Contra-indications
Interactions
Pregnancy
Hepatic impairment
Monitoring requirements
Patient and carer advice
Medicinal forms
Unlicensed use
Cautions
Side-effects
Breast feeding
Renal impairment
Directions for administration
Profession specific information


Medicinal forms
There can be variation in the licensing of different medicines containing the same drug.
Forms available from special-order manufacturers include: oral suspension, oral solution
Tablet, Dispersible tablet, Solution for injection, Modified-release capsule, Oromucosal gel, Capsule


NICE National Institute for Health and Care Excellence
NICE Pathways
Evidence search
Search...
Drugs | Interactions | Treatment Summaries
Home > Drugs > DOXYCYCLINE > Medicinal forms
DOXYCYCLINE
Tablet
Solution for injection
Oromucosal gel
Dispersible tablet
Modified-release capsule
Capsule
Tablet All products
Cautionary and advisory labels
Label 6 - Do not take indigestion remedies, or medicines containing iron or zinc, 2 hours before or after you take this medicine
Label 11 - Protect your skin from sunlight—even on a bright but cloudy day. Do not use sunbeds
Label 27 - Take with a full glass of water
Periostat 20mg tablets (Alliance Pharmaceuticals Ltd)
NHS indicative
Drug tariff

Labels





Be familiar with what labels are available for you to check

Many more below Scroll down

Labels

Label No.	Advice
5-7	Absorption and indigestion remedies, Fe/Zn, milk
8	Do not stop taking this medicine unless your doctor tells you to stop
11	Protect your skin from sunlight—even on a bright but cloudy day. Do not use sunbeds
15	Caution: flammable. Keep your body away from fire or flames after you have put on the medicine
21-23	Timing re: food
25	Swallow this medicine whole. Do not chew or crush

Communicating Information Item | ID COM018 | This question item is worth **2 marks** | You may use the BNF at any time

Case presentation
A 23-year-old woman is due to start infliximab for resistant Crohn's disease.

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

INFORMATION OPTIONS

A	Bruising is likely due to drug administration and is not concerning
B	Fever, cough and weight loss are to be expected as part of disease process
C	If she develops psoriasis, this is a contra-indication to continued use
D	Is taken once weekly by subcutaneous injection
E	Periodic skin examination is required to screen for non-melanoma skin cancer

Answer box

Option A Justification

Bruising may be a sign of blood dyscrasias so should prompt seeking medical attention for FBC

Option B Justification

Could be signs of TB; could be reactivated by TNF alpha antagonists – needs further assessment

Option C Justification

TNF alpha antagonists are licensed for use in psoriatic arthritis [BNF – indications and dose]

Option D Justification

Given iv initially 2 weekly then longer. There is currently no other route than intravenous [BNF – indications and dose]

Option E Justification

Screen for non-melanoma skin cancer periodically [BNF – monitoring requirements]

Calculation Skills Item

ID CAL018

This item is worth **2 marks**

You may use a calculator at any time 

Case presentation
A 24-year-old woman attended the Emergency Department and was treated for anaphylaxis with 0.5ml of 1:1000 adrenaline intramuscularly.

Calculation
What total amount (mg) of adrenaline has been given to the patient?
(Write your answer in the box below)

Answer **0.5** mg

Answer box

Correct answer

0.5 mg

Working

1:1000 (aka 0.1%)
= 1g/1000mL
= 1000mg/1000mL
= 1mg/mL – if cannot remember, see BNF

Therefore 0.5ml = 0.5mg

Calculating from concentration “ratios”

- 1% = 1g/100mL, also 1% = 1:100
- Therefore, 1:100 = 1g/100mL

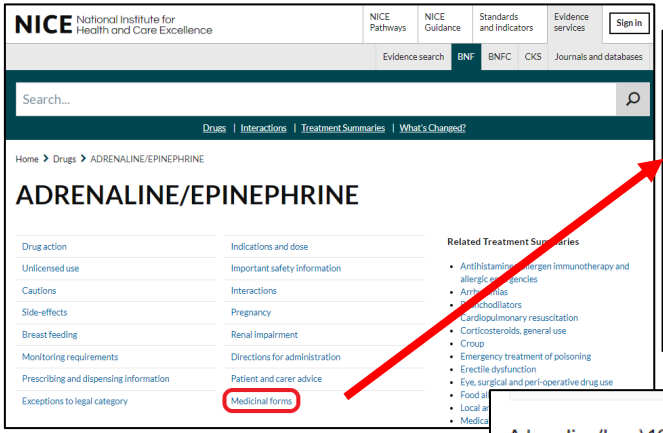
  1:1000 = 1g/1000mL

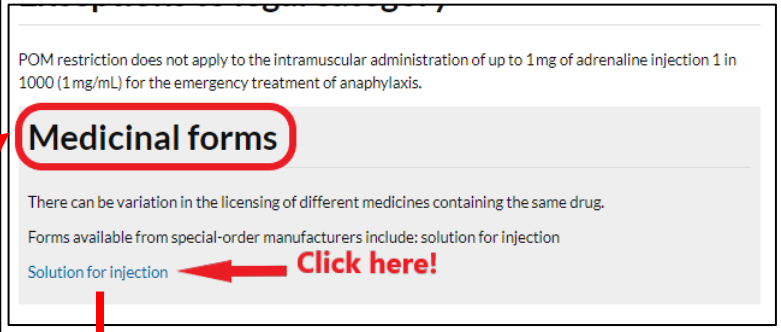
  = 1g/1L

  = 1mg/ml

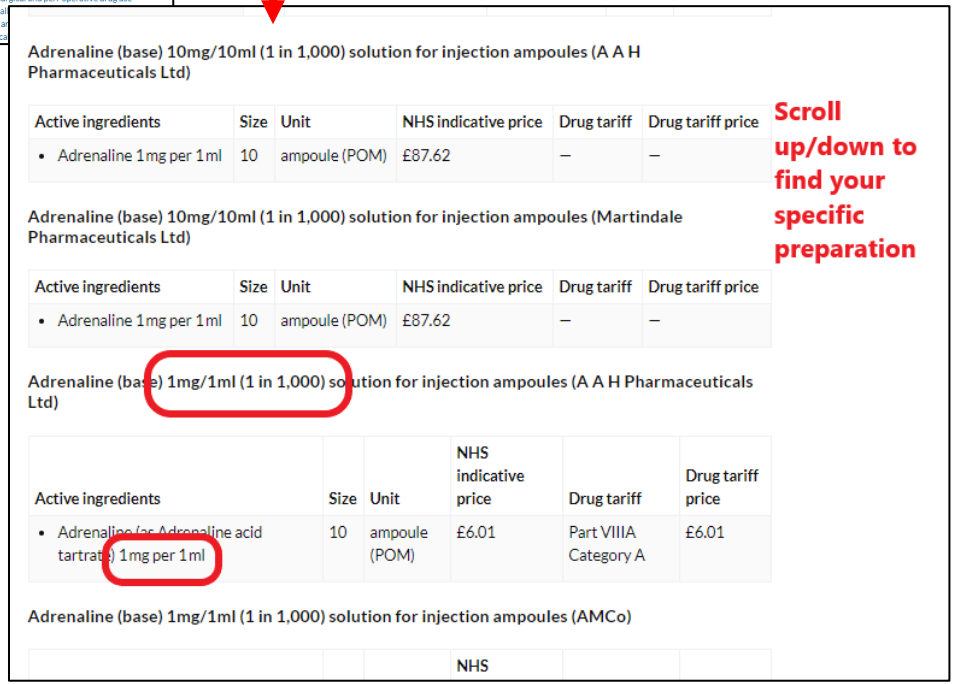
BUT if you cannot recall, then the BNF can help (see next slide)!

Please know how to find in both NICE/eMC versions





Calculating from concentration "ratios"



Calculation Skills Item

ID CAL021

This item is worth **2 marks**

You may use a calculator at any time

Case presentation

A 58 year-old man attends his General Practitioner to discuss his medications. He currently takes ferrous gluconate 300mg orally twice a day. However, due to difficulties swallowing tablets (that is being investigated), he would want to change this to a syrup.

The plan is to change him to an equivalent dose of Polysaccharide-iron complex (Neferix) (100mg iron / 5ml) elixir. Ferrous gluconate 300mg tablets have 35mg elemental iron in 300mg salt.

Calculation

What volume (ml) should you prescribe as a once a day dose?
(Write your answer in the box below)

Answer **3.5** mL

Answer box

Correct answer

3.5 mL

Working

Ferrous gluconate 300mg tablets have 35mg elemental iron in 300mg salt.
This information is available on the “Prescribing and dispensing information” section for the drug. This is true for other oral iron supplements too.

Daily dose needed = 35mg twice a day
= 70mg daily

Neferix has 100mg elemental iron /5ml, hence 20mg/ml,
so dose needed is 3.5ml/day

Calculation Skills Item

ID	CAL026

This item is worth **2 marks**

You may use a calculator at any time

Case presentation
A 68-year old woman is on a Cardiology ward being treated for acute heart failure. She is prescribed 240mg furosemide intravenously.

Intravenous furosemide should not be administered more rapidly than 4mg/minute.

Calculation
What is the minimum time (minutes) over which this dose should be administered?
(Write your answer in the box below)

Answer 60 minutes

Answer box

Correct answer

60 minutes

Working

Rate = Dose/time
Time = Dose/Rate
= 240mg / 4mg/min
= minimum 60 minutes

Calculation Skills Item

ID CAL029

This item is worth **2 marks**

You may use a calculator at any time

Case presentation

A 36 year-old man is admitted to the Intensive Care Unit with severe sepsis of unknown origin. He is prescribed drug X at a dose of 500 nanograms/kg/minute.

Drug X is available at a stock solution of 50mg/5ml, which is subsequently diluted from 5ml to 40ml.

He weighs 75kg.

Calculation

What rate (mL/hr) should Drug X be given?

(Write your answer in the box below)

Answer **1.8** mL/hr

Answer box

Correct answer

1.8 mL/hr

Working

Dose = 500nanog/kg/min x 75kg x 60min
= 2,250,000 nanog/hr
= 2,250microg/hr
= 2.25mg/hr.

5ml (50mg) of Drug X was diluted it to 40ml
This results in 50mg of Drug X in 40ml = 1.25mg/ml

You wish to give 2.25mg/hour
hence, rate = 2.25mg/1.25mg/ml
= 1.8ml/hour

Do a “sense check” with calculations

- Does the number look like a “real-life” answer?

- Last yr:
  - ~25% gave an answer of >100ml/hr
  - 10% gave an answer of >1000ml/h
  - 5% gave an answer of <0.1ml/hr

Adverse Drug Reactions Item – Type A

ID: ADR101

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 53-year-old woman has started to take carbamazepine orally 200mg nightly for seizure control following a traumatic head injury.

Question
Select the adverse effect that is *most likely* to be caused by carbamazepine.
(*mark them with a tick*)

ADVERSE EFFECT OPTIONS

A	Alopecia	
B	Constipation	
C	Gingival hypertrophy	
D	Hirsuitism	
E	Leucopenia	x

Answer box

Option A Justification

Alopecia is a rare side effect of carbamazepine, and is less common than leucopenia

Option B Justification

Constipation is an uncommon side effect of carbamazepine, and is less common than leucopenia

Option C Justification

Gingival hypertrophy is a classic side-effect of phenytoin.

Option D Justification

Phenytoin typically causes facial hirsuitism in some women.

Option E Justification

Any form of bone marrow suppression is possible with carbamazepine therapy

Adverse Drug Reactions Item – Type B

ID	ADR210

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 86-year-old woman attends her General Practitioner together with her son. He reports that she has had increasing episodes of urinary incontinence. **PMH.** Gout, hypertension, moderate severity Alzheimer's Dementia type II diabetes. **DH.** Listed right.

Question
Select the prescription *most likely* to be contributing urinary incontinence
(*mark with a tick*)

PRESCRIPTION OPTIONS

A	Allopurinol 100 mg orally daily	
B	Amlodipine 10 mg orally daily	
C	Donepezil 10 mg orally daily	x
D	Gliclazide 80 mg orally twice daily	
E	Metformin 500 mg orally three times a day	

Adverse Drug Reactions Item – Type C

ID ADR302

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation

A 73-year-old woman with bronchiectasis and chronic obstructive pulmonary disease is being treated in hospital for a severe exacerbation of her usual wheeze and productive cough. Her regular medicines include oral theophylline that is continued in hospital.

Her other in-patient prescriptions are listed (right). On Day 3 of admission, she suffers a first-ever seizure.

Question

Of the prescriptions listed here, which is *most likely* to have a drug-drug interaction with theophylline contributing to the occurrence of a seizure in this patient.
(*mark with a tick*)

PRESCRIPTION OPTIONS

A	Ciprofloxacin 500 mg orally 12-hrly	✓
B	Enoxaparin 40 mg subcutaneously daily	
C	Ipratropium 250micrograms nebulised 6-hrly	
D	Prednisolone 30mg orally daily	
E	Salbutamol 2.5 mg nebulised 6-hrly	

Answer box

Option A Justification

Ciprofloxacin may trigger seizures probably by lowering seizure threshold; it is also a CYP 3A4 enzyme inhibitor and increases theophylline (metabolised by 3A4) levels; excessive theophylline levels are also associated with seizures

Option B Justification

Enoxaparin has few drug-drug interactions.

Option C Justification

Nebulised drugs rarely have significant interactions with oral drugs

Option D Justification

Prednisolone has reports of seizure association among patients with a history of seizures but is not the 'most likely' contributor here

Option E Justification

Nebulised drugs rarely have significant interactions with oral drugs

Adverse Drug Reactions Item – Type D

T D	ADR404

This item is worth **2 marks**

You may use the BNF at any time

Case presentation
An 8-year-old girl is nauseous post appendicectomy and is given metoclopramide iv. A few minutes alter she developed sustained conjugate upward and lateral deviation of the eyes and involuntary neck muscles contractions.

Question
Select the prescription that is *most likely* to be effective in controlling this adverse reaction
(*mark it with a tick*)

PRESCRIPTION OPTIONS

A	Diazepam 5mg per rectum	
B	Lorazepam 0.5mg orally	
C	Ondansetron 4mg intravenously	
D	Procyclidine 5mg intravenously	✓
E	Trihexyphenidyl 1mg orally	

Answer box

Option A Justification

Iv diazepam can be used for life threatening drug induced dystonia

Option B Justification

Benzodiazepines as muscle relaxants are not appropriate in this setting

Option C Justification

Effective anti emetic but not treating ADR here

Option D Justification

Drug and dose of choice

Option E Justification

Anti muscarinic agents can be used for dystonias but not oculo gyric crisis which mandates iv treatment

Metoclopramide

- Should only be used for:
  - prevention of postoperative, radiotherapy-induced, delayed (but not acute) chemotherapy-induced nausea and vomiting, and symptomatic treatment of nausea and vomiting, including that with acute migraine
  - Even then, should only be prescribed for short-term use (up to 5 days)

- Can induce acute dystonic reactions involving facial and skeletal muscle spasms and oculogyric crises.
  - More common in the young (especially girls/young women) and very old
  - Usually occur shortly after starting and subside within 24 hours
  - Treatment with **procyclidine 5-10mg intravenously (or intramuscularly)**
  - Relative contraindication in Parkinson's Disease

- Long-term use can also result in
  - Galactorrhoea; gynaecomastia; hyperprolactinaemia; menstrual changes

Data Interpretation Item

ID DAT001

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 12 tablets of paracetamol 6 hours ago. He is currently asymptomatic and compliant with treatment. His plasma paracetamol levels at 6 hours is 80 mg/L.

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	x
C	Activated charcoal 50mg orally	
D	Methionine 500mg orally 4hr-ly	
E	No immediate action	

Answer box

Option A Justification

Gastric decontamination is not indicated 6 hours after poisoning. Lavage has serious risks of aspiration and is not to be used unless the airway can be protected.

Option B Justification

Correct treatment dose

Option C Justification

Gastric decontamination is not indicated 6 hours after poisoning.

Option D Justification

Methionine is not first line management. Additionally, this is the wrong dose for paracetamol overdosing

Option E Justification

His level above the treatment line suggesting treatment is indicated

Learning points

Know where to find information on overdoses

- **Treatment summaries > Treatment summaries by body system > "Poisoning, emergency treatment"**

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

*****THIS IS A COMMON TYPE OF QUESTION*****

NICE National Institute for Health and Care Excellence

NICE Pathways | NICE guidance | Standards and indicators | Evidence services | Sign in

Evidence search | BNF | BNFC | CKS | Journals and databases

poisoning

Drugs | Interactions | Treatment Summaries | What's Changed?

Home > Search: poisoning

Showing 1-10 of 161 results for "**poisoning**"

Poisoning, emergency treatment *Treatment summary*

blockers **poisoning** Features of calcium-channel blocker **poisoning** include nausea, vomiting, dizziness, agitation, confusion, and coma in severe **poisoning**. Metabolic

NICE National Institute for Health and Care Excellence

NICE Pathways | NICE guid

Evidence search

Search...

Drugs | Interactions | Treatment Summaries | What's Ch

Home > Treatment summary > Poisoning, emergency treatment

Poisoning, emergency treatment

Overview

These notes provide only an overview of the treatment of poiso
TOXBASE or the **UK National Poisons Information Service** be
of risk or about management.

Hospital admission

Patients who have features of poisoning should generally be ad
poisons with delayed action should also be admitted, even if the
aspirin, iron, paracetamol, tricyclic antidepressants, and co-phe
the effects of modified-release preparations are also delayed. A
treatment has been given, should accompany the patient to hospital.

Further information

A lot of stuff here
Be familiar with what is available

Either scroll down or "Ctrl-F"

Paracetamol poisoning

In cases of **intravenous paracetamol poisoning** contact the National Poisons Information Service for advice on risk assessment and management.

Toxic doses of paracetamol may cause severe hepatocellular ne
necrosis. Nausea and vomiting, the only early features of poiso
beyond this time, often associated with the onset of right subc
development of hepatic necrosis. Liver damage is maximal 3–4
to encephalopathy, haemorrhage, hypoglycaemia, cerebral oed
significant early symptoms, patients who have taken an overdo
hospital urgently.

To avoid underestimating the potentially toxic paracetamol do
than 110 kg, use a body-weight of 110 kg (rather than their act
of paracetamol ingested (in mg/kg).

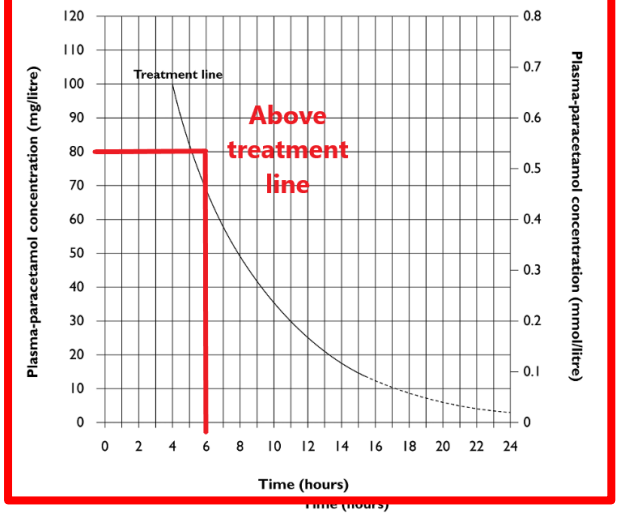
Acetylcysteine protects the liver if infused up to, and possibly b
most effective if given within 8 hours of ingestion, after which effectiveness declines. Very rarely, giving acetylcysteine by mouth [unlicensed route] is an alternative if intravenous access is n possible—contact the National Poisons Information Service for advice.

Neonates less than 45 weeks corrected gestational age may be more susceptible to p acetamol-induced liver toxicity, therefore, treatment with acetylcysteine should be considered in all paracetamol overdoses, and

Important for you to know where to find the relevant information

Scroll down for more info

Paracetamol overdose treatment graph



Data Interpretation Item | ID | DAT002 | This question item is worth **2 marks** | You may use the BNF at any time

Case presentation

A 75-year-old woman has been admitted with acute confusion and a fever. Her urine dip was positive for nitrites and leucocytes, and there no other findings of note. She has been treated with nitrofurantoin 100 mg orally 12hr-ly for the last day. **PMH.** Nil. **DH.** Nil current. She weighs 68 kg.

After a day of antibiotic therapy, microbiological results from her urine sample is available. She is still taking food and medications orally.

eGFR 78

Urine MC&S results:
Sample: Urine
Escherichia Coli >100,000/ml

Amoxicillin	**R**
Amoxicillin/clavulinic acid	**S**
Ceftazolin	**S**
Ceftriaxone	**S**
Ciprofloxacin	**R**
Doxycycline	**R**
Ertapenem	**S**
Gentamicin	**S**
Nitrofurantoin	**R**
Ofloxacin	**R**
Piperacillin/tazobactam	**S**
Tigecycline	**R**
Trimethoprim	**R**

Question

Select the *most appropriate* decision option with regard to her antibiotic treatment (*mark it with a tick*)

DECISION OPTIONS

A	Change nitrofurantoin to amoxicillin 500mg orally 8-hrly	
B	Change nitrofurantoin to co-amoxiclav 250/125mg orally 8-hrly	✓
C	Change nitrofurantoin to tazosin 4.5mg intravenously 8-hrly	
D	Change nitrofurantoin to trimethoprim 200mg orally 12-hrly	
E	Continue with nitrofurantoin 100 mg orally 12hr-ly	

Answer box

Option A Justification

The microbiology results indicates that the organism is resistant to amoxicillin

Option B Justification

The microbiology results indicates that the organism is sensitive to co-amoxiclav (amoxicillin/clavulinic acid). An oral medication would be most appropriate at this time

Option C Justification

Although microbiology results indicates that the organism is sensitive to *tazocin* (piperacillin/tazobactam), this would not be an appropriate next step to a third-line antibiotic

Option D Justification

The microbiology results indicates that the organism is resistant to trimethoprim

Option E Justification

Th
ni

Antimicrobial choice based on MC&S

Factors		This question
Which antibiotic is the organism sensitive to?	Look at microbiology reports (**S = sensitive/susceptible**, I = intermediate, R = resistant)	Excludes (A) amoxicillin, (D) trimethoprim and (E) nitrofurantoiun
Is there an antibiotic allergy?	Remember cross-reactivity!	Not relevant in this question
Choose oral vs intravenous	• Is there indication for intravenous route (e.g. severe infection)? • Can/will the patient take oral medications? • Is there vomiting or severe confusion declining oral medications?	• Not clearly septic • Taking oral medications • Not vomiting → Orals can be appropriate here → Maybe more appropriate than (C) IV *tazocin*
Renal (and liver) function	Does it changes choice / dosing?	Not in this question
Check past medical history – any other contraindications	• E.g. Quinolones with long QT, G6PD • E.g. Nitrofurantoin with G6PD, folate deficient (or predisposition) • E.g. Trimethoprim with folate deficiency (or predisposition) • Also check if pregnant / breastfeeding	Not relevant in this question

Data Interpretation Item | ID DAT013 | This item is worth **2 marks** | You may use the BNF at any time

Case presentation
A 50-year-old man attends for routine diabetic review. **PMH.** Heart failure with reduced ejection fraction. **DH.** Bisoprolol 2.5mg daily, Ramipril 10mg daily, Simvastatin 40mg daily, Aspirin 75mg daily, Metformin 1 gram twice daily.

BMI 29 kg/m^2

Investigations.
HbA1c 70 mmol/mol (20-42); eGFR 70 mL/min

Question
Select of the following choices, the *most appropriate* decision option with regard to his diabetes medication based on these data.
(*mark it with a tick*)

DECISION OPTIONS

A	Add modified release exenatide 2mg subcutaneously once weekly	
B	Add pioglitazone 15 mg orally daily	
C	Add sitagliptin 100 mg orally daily	
D	Increase metformin to 1g orally three times a day	
E	Add dapagliflozin 10mg orally daily	✓

Answer box

Option A Justification

Not second line therapy, only add on in obese diabetic once on more medications

Option B Justification

Pioglitazone is not commonly started. It is contraindicated in patients with a history of cardiac failure

Option C Justification

One of the NICE recommended second line agents after metformin [SGLT2i better)

Option D Justification

Already taking max dose of metformin

Option E Justification

SGLT2i have mortality benefit in heart failure as well as being anti-diabetic

Type II Diabetes mellitus pharmacotherapy

- Metformin is typically FIRST LINE unless contraindicated or intolerance

- Intensification of therapy if HbA1c raises above 58 mmol/mol (7.5%)
  - At any stage after starting initial treatment, an SGLT2 inhibitor with proven cardiovascular benefit **should be offered** to patients who develop chronic heart failure or established atherosclerotic cardiovascular disease, and should be considered in patients who become at high risk of developing cardiovascular disease
  - Otherwise, If monotherapy with metformin hydrochloride (alongside modification to diet) does not control HbA1c to below the agreed threshold, consider metformin hydrochloride in combination with either a dipeptidylpeptidase-4 (DPP-4) inhibitor, or pioglitazone, or a sulfonylurea.

	Drug / class	Contraindications / cautions	Notes
First line	**Metformin**	• Contraindicated with acute metabolic acidosis (including lactic and diabetic ketoacidosis) • Avoid if eGFR <30	• FIRST LINE unless contraindicated or intolerance • GI side effects common
Options for second line therapy (depending on individual patient)	**Pioglitazone**	• Contraindicated with heart failure, previous/active bladder cancer; macroscopic haematuria • Hypoglycaemia uncommon • Hepatic metabolism	• Increased risk of heart failure, bladder cancer and bone fracture.
	Sulfonylurea (e.g. gliclazide)	• Contraindicated with ketoacidosis • Hypoglycaemia risk (not optimal if operates heavy machinery / HGV driver etc.) • Weight gain (may not be optimal if obese patient) • Renal dosing	• Longer-acting (glibenclamide) higher risk of severe, prolonged hypoglycaemia – and hence further caution in elderly.
	SGLT-2 inhibitor (-flozins)	• Contraindicated with ketoacidosis • Renal dosing • Hypoglycaemia uncommon	• Can cause hypotension and increases risk of UTIs and genital infections
	DPP-4 inhibitor (-gliptins)	• Contraindicated with ketoacidosis • Renal dosing • Hypoglycaemia uncommon	• Risk of acute pancreatitis
Less commonly used	**Metaglinides (e.g. repaglinide)**	• Contraindicated with ketoacidosis • Hypoglycaemia risk (not optimal if operates heavy machinery / HGV driver etc.) • Weight gain (may not be optimal if obese patient) • Renal dosing	
Specialist care to initiate	**GLP-1 mimetic**	• Complex management	
Specialist care to initiate	**Insulin**	• Often 4th line	

General learning points

- Use first/next line and starter doses where not contraindicated
  - Be very careful when **PMH, DH, SH, Ex and Ix** may change your choices (not in this case)

Drug Monitoring Item

ID TDM001

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 28-year-old woman is commenced on quetiapine for schizophrenia.

Question
Select the *most appropriate* monitoring option that should be arranged routinely for this patient prior to medication initiation (*mark them with a tick*)

MONITORING OPTIONS

A	Breast examination	
B	Echocardiogram	
C	Oral glucose tolerance test	
D	Serum prolactin	✓
E	24 hour electrocardiogram	

Answer box

Option A Justification

Galactorrhoea or breast tenderness may be sign of hyperprolactin state but routine breast examination is not required

Option B Justification

All patients with schizophrenia should have yearly CV disease assessment but an echo is not part of routine assessment

Option C Justification

Some anti-psychotics are associated with dysglycaemia but formal OGTT is not required prior to use

Option D Justification

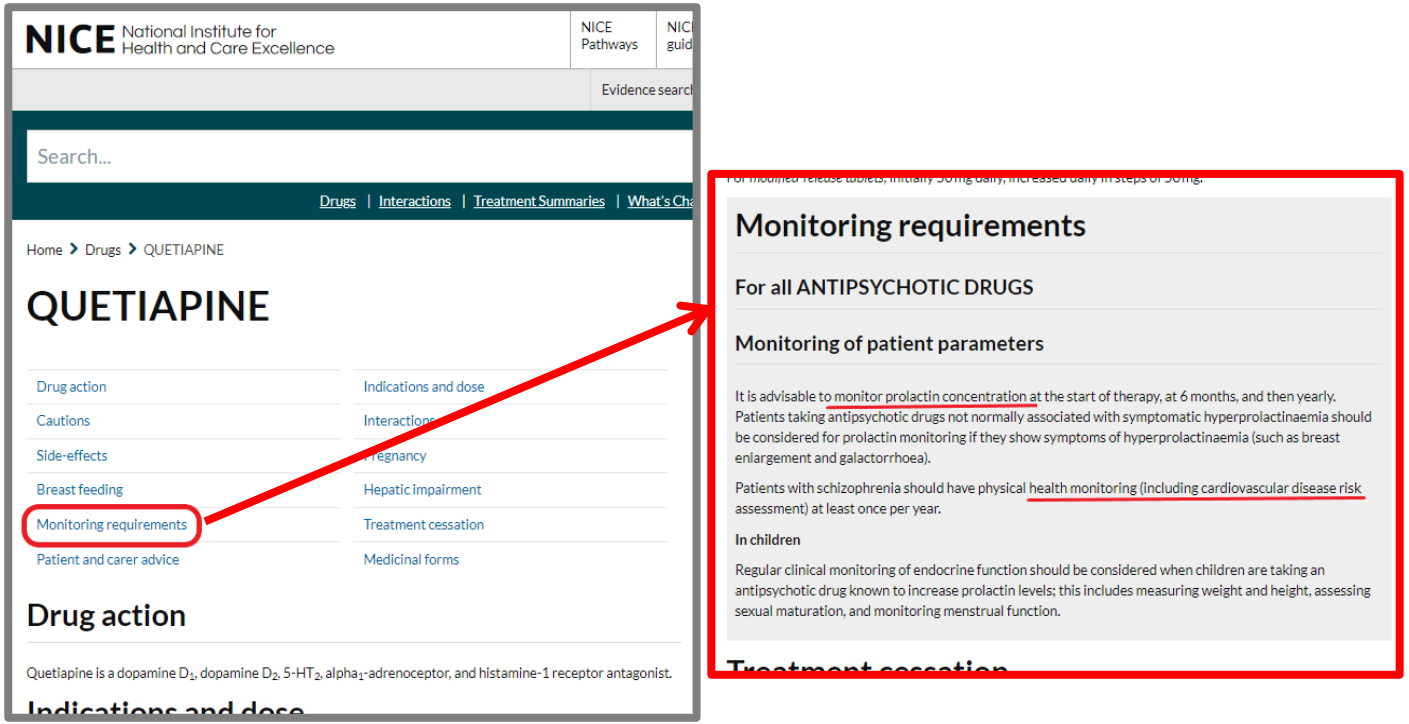
Recommended by BNF for all anti-psychotic use

Option E Justification

A resting 12 lead ECG is recommended by RCPsych and CV risk assessment is recommended by BNF, but not a 24h ECG

Learning points

Be aware of “monitoring requirements” subsection in BNFs



Drug Monitoring Item | ID | TDM010 | This question item is worth **2 marks** | You may use the BNF at any time

Case presentation
A 23-year-old man is admitted with a pneumonia. **PMH** nil. **DH** nil. **SH** smoker 20/d.

He is started on intravenous antibiotics and oxygen therapy

Question
Select the *most appropriate* monitoring option in relation to oxygen therapy(*mark it with a tick*)

MONITORING OPTIONS

A	Titrate to maintain SpO2 >96%
B	Titrate to maintain SpO2 94-98%
C	Titrate to maintain SpO2 88-92%
D	Titrate to maintain arterial PO2 > 8kPa
E	Titrate to maintain arterial PCO2 4.5-6 kPa

Answer box

Option A Justification

Only required for CO poisoning or similar

Option B Justification

Correct

Option C Justification

If at risk of loss of hypoxic drive to breathe [ie.COPD] but no diagnosis or suggestion in this case

Option D Justification

Unless in HDU environment, titration to arterial gases is not feasible or desirable

Option E Justification

Unless in HDU environment, titration to arterial gases is not feasible or desirable

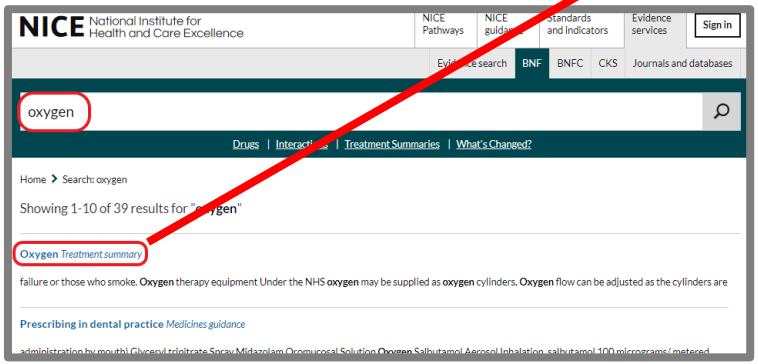
Oxygen therapy – BTS guidelines 2017 (1/2)

- Is the patient critically ill?
  - Cardiac arrest or resuscitation
  - Shock, sepsis, major trauma, drowning, anaphylaxis, major pulmonary haemorrhage, status epilepticus
  - Major head injury
  - Carbon monoxide poisoning
  - Initial oxygen therapy is a reservoir mask at 15 L/min pending the availability of reliable oximetry readings

Oxygen therapy – BTS guidelines 2017 (2/2)

- If not patient critically ill
- Is the patient <u>at risk</u> of hypercapnic respiratory failure?
    - Moderate – severe COPD (especially those with previous respiratory failure or on long term O_2)
    - Severe chest wall deformity / kyphoscoliosis
    - Neuromuscular disease
    - Severe obesity / obesity hypoventilation
    - Cystic fibrosis
    - Bronchiectasis
  - Target saturations 88-92%
    - with controlled O_2 whilst awaiting blood gasses

- If <u>not at risk</u> of hypercapnic respiratory failure – **this patient**
  - Target saturations 94-98%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Oxygen Treatment summary
failure or those who smoke. Oxygen therapy equipment Under the NHS oxygen may be supplied as oxygen cylinders. Oxygen flow can be adjusted as the cylinders are
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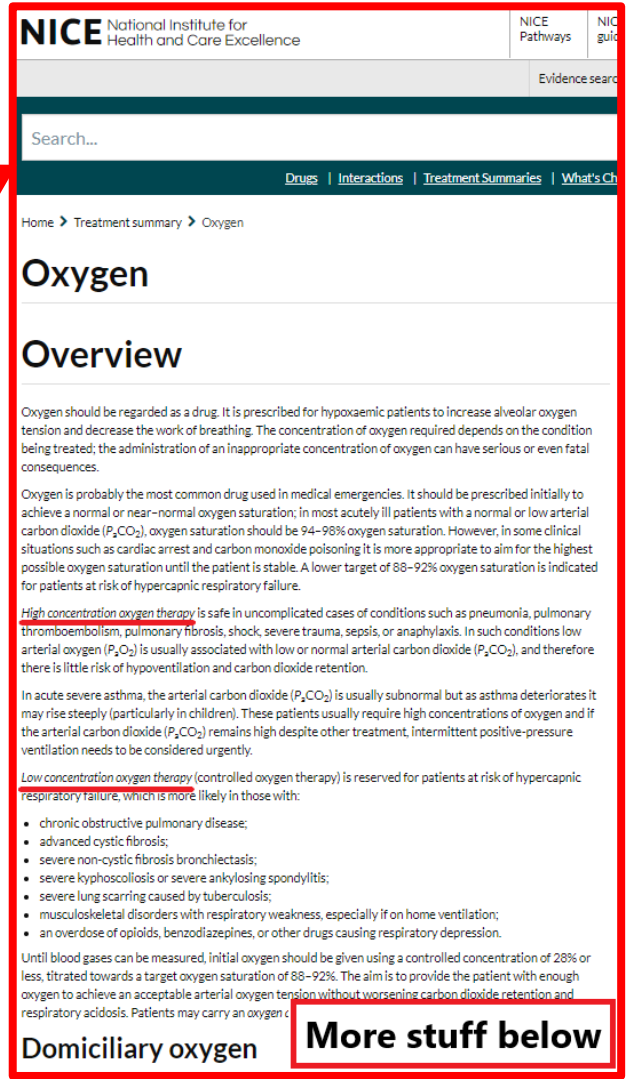
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Oxygen
Overview
Oxygen should be regarded as a drug. It is prescribed for hypoxaemic patients to increase alveolar oxygen tension and decrease the work of breathing. The concentration of oxygen required depends on the condition being treated; the administration of an inappropriate concentration of oxygen can have serious or even fatal consequences.
Oxygen is probably the most common drug used in medical emergencies. It should be prescribed initially to achieve a normal or near-normal oxygen saturation; in most acutely ill patients with a normal or low arterial carbon dioxide (P_aCO_2), oxygen saturation should be 94–98% oxygen saturation. However, in some clinical situations such as cardiac arrest and carbon monoxide poisoning it is more appropriate to aim for the highest possible oxygen saturation until the patient is stable. A lower target of 88–92% oxygen saturation is indicated for patients at risk of hypercapnic respiratory failure.
High concentration oxygen therapy is safe in uncomplicated cases of conditions such as pneumonia, pulmonary thromboembolism, pulmonary fibrosis, shock, severe trauma, sepsis, or anaphylaxis. In such conditions low arterial oxygen (P_aO_2) is usually associated with low or normal arterial carbon dioxide (P_aCO_2), and therefore there is little risk of hypoventilation and carbon dioxide retention.
In acute severe asthma, the arterial carbon dioxide (P_aCO_2) is usually subnormal but as asthma deteriorates it may rise steeply (particularly in children). These patients usually require high concentrations of oxygen and if the arterial carbon dioxide (P_aCO_2) remains high despite other treatment, intermittent positive-pressure ventilation needs to be considered urgently.
Low concentration oxygen therapy (controlled oxygen therapy) is reserved for patients at risk of hypercapnic respiratory failure, which is more likely in those with:
chronic obstructive pulmonary disease;
advanced cystic fibrosis;
severe non-cystic fibrosis bronchiectasis;
severe kyphoscoliosis or severe ankylosing spondylitis;
severe lung scarring caused by tuberculosis;
musculoskeletal disorders with respiratory weakness, especially if on home ventilation;
an overdose of opioids, benzodiazepines, or other drugs causing respiratory depression.
Until blood gases can be measured, initial oxygen should be given using a controlled concentration of 28% or less, titrated towards a target oxygen saturation of 88–92%. The aim is to provide the patient with enough oxygen to achieve an acceptable arterial oxygen tension without worsening carbon dioxide retention and respiratory acidosis. Patients may carry an oxygen
Domiciliary oxygen
More stuff below

Drug Monitoring Item

ID TDM016

This question item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 55-year-old is due to start on cabergoline for prolactinoma.

Question
Select the ONE *most appropriate* monitoring option (*mark it with a tick*)

MONITORING OPTIONS

A	Body mass index	
B	Blood pressure	✓
C	Peak flow	
D	Urine output	
E	Visual fields	

Answer box

Option A Justification

No indication for this

Option B Justification

"Monitor blood pressure for a few days after starting treatment and following dosage increase."

Option C Justification

Can cause pulmonary fibrosis, so intermittent full pulmonary function tests can be done if symptomatic

Option D Justification

No indication for this

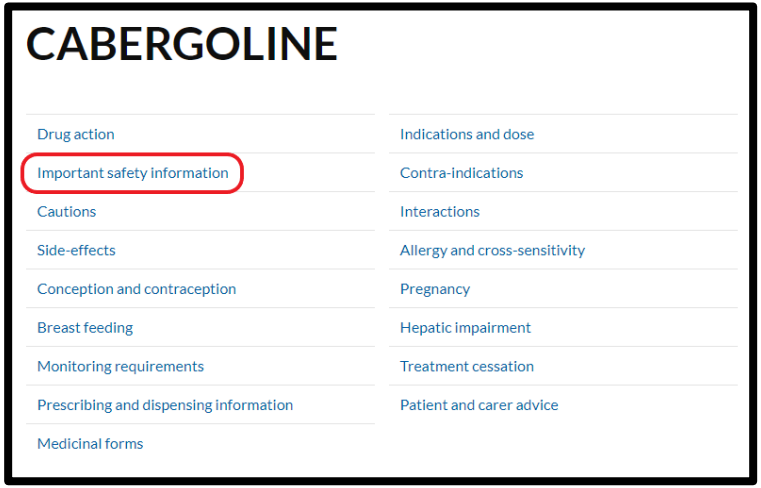
Option E Justification

Visual fields can be affected by the prolactinoma itself

“Important Safety Information”

- Please check the section “important safety information” if present.

- Often has more detailed information on:
  - Side effects
  - Monitoring
  - Cautions / contraindications



Drug Monitoring Item

ID	TDM019

This item is worth **2 marks**

You may use the BNF at any time

Case presentation
A 85 year old man has developed severe bruising and epistaxis. He was recently diagnosed with a pulmonary embolism, commenced on enoxaparin 50 mg subcutaneously 12hrly with assistance from district nurses, due to inconsistent tablet intake due to his Alzheimer's dementia.

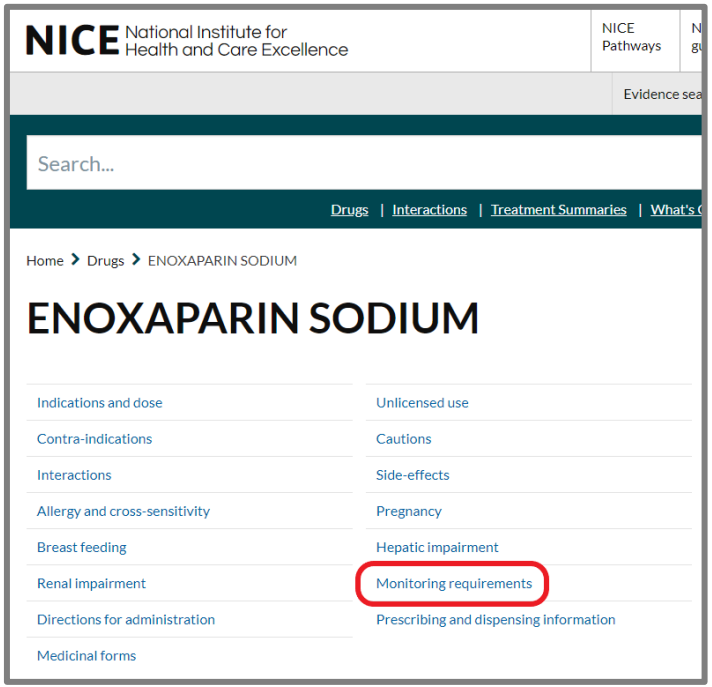
Weight 50kg, height 1.75m, BMI is 16.3 kg/m^2.

Investigations:
Platelet count 252 x 109/L (Reference range 150–400)

Question
Select the *most appropriate* monitoring option to assess the anticoagulant effect of enoxaparin in this patient
(*mark it with a tick*)

MONITORING OPTIONS

A	Anti-factor Xa assay	x
B	Activated partial thromboplastin time	
C	Bleeding time	
D	Monitor clinically	
E	Prothrombin time	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Breast feeding
Renal impairment
Directions for administration
Medicinal forms
Unlicensed use
Cautions
Side-effects
Pregnancy
Hepatic impairment
Monitoring requirements
Prescribing and dispensing information

	How?	When?	Other factors for dosing
Warfarin	INR	Regularly Also during dose changes, interacting medications, acute illnesses, surgery/procedures	Liver - Avoid in severe impairment (especially if PT/INR already prolonger) Renal - Caution in impairment. With severe renal impairment, monitor INR more frequently.
Low molecular weight heparin	anti-Factor Xa activity	Not routine • But may be necessary in patients at **increased risk of bleeding / difficult dosing** (e.g. in **renal impairment** and those who are **underweight** or **overweight**, **pregnancy**) • NOTE: will need to **monitor platelets** (for heparin-induced thrombocytopenia)	Liver - Reduce dose or avoid in severe hepatic impairment Renal - Dose may need to be reduced in impairment (or use other anticoagulant) - eGFR cut offs in BNF
Unfractionated heparin infusion	aPTT (activated partial thromboplastin time)	Regularly during infusion	Liver - Reduce dose or avoid in severe impairment Renal - Dose may need to be reduced in impairment
Direct oral anticoagulant • **apixaban, rivaroxaban, edoxaban (activated factor Xa inhibitor)** • **dabigatran (thrombin inhibitor)**	None in clinical use (monitor clinically only) *****Might change in future*****	Monitor clinically	Liver - caution in mild-to-moderate impairment; avoid in severe impairment and in coagulopathy Renal - Dose may need to be reduced in impairment - eGFR cut offs in BNF
Fondaparinux (activated factor X inhibitor)	None in clinical use (monitor clinically only)	Monitor clinically	Liver – Caution in severe hepatic impairment Renal - Dose may need to be reduced in impairment (or use other anticoagulant) - eGFR cut offs in BNF

Assessment Events | Assessment Feedback | Understanding PSA Score | Practice Assessments | Change Password

Practice assessments

On this page you have will have access to practice (formative) PSA assessments. These are intended to allow you to test your own knowledge and skills related to prescribing and familiarise yourself with the PSA assessment environment. The first practice assessment is half the length of a standard PSA assessment. It contains 30 questions, worth a total of 100 marks, and should be completed within one hour. Standard PSA assessments will contain 60 questions, worth a total of 200 marks, and should normally be completed in two hours. After you complete these practice assessments, you will be given your total score and the score you achieved in each of the 8 sections of the assessment.

If you are registered for a Mock PSA please go to Assessment Events tab to access it.

Question Paper	Test	Results [%]	Clear
PSA Practice Paper 1	START TEST	RESULTS	CLEAR RESULTS
PSA Practice Paper 2	START TEST	RESULTS	CLEAR RESULTS
PSA Practice Paper 3	START TEST	RESULTS	CLEAR RESULTS
PSA Demonstration Paper	START TEST	RESULTS	CLEAR RESULTS