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39	A	B	C	D	E

PRACTICE QUESTIONS

PEBC / BEPC - The Pharmacy Examining Board of Canada / Le Bureau des examinateurs en pharmacie du Canada

PQEI

Pharmacist Qualifying Examination Part I (MCQ)

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for PEBC / BEPC - The Pharmacy Examining Board of Canada / Le Bureau des examinateurs en pharmacie du Canada **PQE1**, each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, **PQE1**
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

MULTIPLE CHOICE

A 55-year-old patient (weight 70 kg) with a creatinine clearance of 30 mL/min is to be started on vancomycin. Which TWO of the following pharmacokinetic adjustments are most appropriate when designing the dosing regimen?

- ☐ **A** Increase the loading dose proportionally to the degree of renal impairment
- ☒ **B** Extend the dosing interval because the elimination half-life is prolonged
- ☒ **C** Reduce the maintenance dose because clearance is reduced
- ☐ **D** Discontinue vancomycin because it is contraindicated in renal impairment
- ☐ **E** Use a larger initial (loading) dose to rapidly achieve therapeutic concentrations when volume of distribution is unchanged
- ☐ **F** Administer the drug by continuous infusion regardless of renal function

ANSWER B • C

WHY In renal impairment, vancomycin clearance is reduced and the elimination half-life is prolonged, so the maintenance dose should be reduced and/or the dosing interval extended. The loading dose depends primarily on volume of distribution, which is generally unchanged, so it is typically not increased proportionally to renal impairment (options A and E are not the best adjustments). Vancomycin is not contraindicated in renal impairment — it simply requires dose adjustment. Continuous infusion is a separate pharmacodynamic strategy, not a routine adjustment dictated by renal function alone.

QUESTION 2

MULTIPLE CHOICE

An elderly patient with atrial fibrillation is prescribed warfarin. They currently take amiodarone, naproxen, and a multivitamin containing vitamin K. Which TWO of the following actions by the pharmacist are most appropriate to prevent an adverse drug event?

- ☐ **A** Recommend discontinuing warfarin in favour of ASA 81 mg daily
- ☒ **B** Counsel the patient about consistent vitamin K intake and avoid sudden dietary changes
- ☐ **C** Recommend holding amiodarone because it inhibits CYP2C9 and increases warfarin concentrations
- ☒ **D** Recommend acetaminophen instead of naproxen for analgesia to reduce bleeding risk
- ☐ **E** Recommend doubling the warfarin dose to compensate for the multivitamin
- ☐ **F** Advise the patient to omit INR monitoring since interactions are well known

ANSWER B - D

WHY Vitamin K from food or supplements antagonizes warfarin; patients should be counseled to keep vitamin K intake consistent and avoid large fluctuations. NSAIDs such as naproxen increase bleeding risk when combined with warfarin by impairing platelet function and irritating the GI mucosa, so switching to acetaminophen (used appropriately) is reasonable. Warfarin remains the standard for stroke prevention in atrial fibrillation when CHA₂DS₂-VASc supports anticoagulation; ASA is not an equivalent substitute in non-valvular AF (A is incorrect). Amiodarone inhibits warfarin metabolism and increases INR, but the pharmacist should not recommend stopping a cardiologist-prescribed antiarrhythmic (C is inappropriate). Doubling the warfarin dose (E) and omitting INR monitoring (F) are unsafe.

QUESTION 3

SINGLE CHOICE

A patient with type 2 diabetes mellitus and chronic kidney disease (eGFR 25 mL/min/1.73 m²) needs intensification beyond metformin. Which add-on agent is most appropriate to avoid hypoglycemia and reduce cardiorenal risk?

- ☐ A Glyburide
- ☐ B Sitagliptin
- ☒ C Empagliflozin
- ☐ D Repaglinide

ANSWER C

WHY Empagliflozin, an SGLT2 inhibitor, has demonstrated cardiorenal benefit in patients with type 2 diabetes and chronic kidney disease, with a low intrinsic risk of hypoglycemia when used without insulin or sulfonylureas. However, at an eGFR of 25 mL/min/1.73 m², empagliflozin is generally not recommended to be initiated for glycemic control (guidelines typically set a threshold around eGFR 20–30 mL/min/1.73 m² for initiation), but among the choices given it is the option with the best cardiorenal evidence. Glyburide (A) is a long-acting sulfonylurea contraindicated in CKD due to hypoglycemia risk. Sitagliptin (B) is renally dosed but does not provide cardiorenal protection. Repaglinide (D) has limited evidence of cardiorenal benefit and a higher hypoglycemia risk than an SGLT2 inhibitor.

QUESTION 4

SINGLE CHOICE

A patient is picking up a new prescription for alendronate 70 mg once weekly. Which counseling point is most important to convey to ensure therapeutic efficacy and safety?

- ☐ A Take the tablet with food to reduce nausea
- ☐ B Take the tablet at bedtime with a glass of juice
- ☒ C Take the tablet in the morning, at least 30 minutes before food, drink, or other medications, with a full glass of plain water, and remain upright for at least 30 minutes
- ☐ D Take the tablet with calcium and vitamin D at the same time to improve absorption

ANSWER C

WHY Bisphosphonates such as alendronate are poorly absorbed (<1%) and must be taken on an empty stomach with plain water, separated from food, calcium, iron, antacids, and other medications by at least 30 minutes. Patients must remain upright (sitting or standing) for at least 30 minutes after dosing to reduce the risk of esophagitis and esophageal ulceration. Taking with food (A), at bedtime (B), or together with calcium/vitamin D (D) all significantly reduce absorption and/or increase esophageal adverse effects.

QUESTION 5

SINGLE CHOICE

A pharmacist receives a prescription for insulin glargine (Lantus) cartridges. Which storage instruction is most appropriate to give the patient?

- ☐ A Freeze the cartridges to maintain potency
- ☒ B Store unopened cartridges in the refrigerator (2°C to 8°C); in-use cartridges may be kept at room temperature for up to 28 days
- ☐ C Store all cartridges at room temperature indefinitely
- ☐ D Store cartridges in the refrigerator and discard immediately after the first dose

ANSWER B

WHY Unopened insulin glargine cartridges should be refrigerated at 2°C–8°C and protected from light and freezing. Freezing (A) damages insulin and must be avoided. Once in use, cartridges/pens can typically be kept at room temperature (below 30°C) for up to 28–30 days (per product labelling) and must not be refrigerated again once in use because temperature cycling and repeated cold exposure can affect stability. In-use cartridges should not be kept indefinitely at room temperature (C), nor discarded immediately after a single dose (D).

QUESTION 6

SINGLE CHOICE

Under the Controlled Drugs and Substances Act (CDSA) in Canada, which of the following is required when dispensing a narcotic such as hydromorphone for a patient?

- ☐ A No record-keeping is required because the prescription is written by a physician
- ☒ B The pharmacist must verify the prescriber's authorization and maintain records of the narcotic dispensed as required by federal/provincial legislation
- ☐ C The patient must be enrolled in a methadone program before receiving any narcotic
- ☐ D The pharmacist may transfer a narcotic prescription to another pharmacy without restriction

ANSWER B

WHY Under the Controlled Drugs and Substances Act and the Narcotic Control Regulations, pharmacists must verify the prescriber's authorization (including the prescriber's licence to prescribe narcotics in the relevant province) and maintain adequate records (purchases, receipts, sales, and dispensings) of all narcotics, in a manner that can be audited. Narcotic prescriptions also have specific requirements regarding written versus verbal prescriptions, refills, and transfers, and a single narcotic prescription may only be transferred once between pharmacies (not without restriction as in option D). Record-keeping is mandatory (A is wrong), and being in a methadone program (C) is unrelated to dispensing a hydromorphone prescription for pain.

QUESTION 7

SINGLE CHOICE

A patient taking warfarin with a stable INR is started on ciprofloxacin for a urinary tract infection. Which pharmacokinetic interaction best explains the expected effect on warfarin?

- ☐ A Ciprofloxacin induces hepatic CYP enzymes, accelerating warfarin metabolism
- ☒ B Ciprofloxacin inhibits CYP1A2 and CYP3A4 and disrupts gut flora that produce vitamin K, leading to increased INR
- ☐ C Ciprofloxacin chelates warfarin in the GI tract, reducing its absorption
- ☐ D Ciprofloxacin is a potent inducer of CYP2C9, decreasing warfarin concentrations

ANSWER B

WHY Fluoroquinolones such as ciprofloxacin can potentiate the effect of warfarin by inhibiting CYP enzymes (notably CYP1A2, with some contribution from CYP3A4) and by reducing intestinal bacterial synthesis of vitamin K, leading to an increased INR and bleeding risk. Ciprofloxacin is not a CYP inducer (A and D are wrong) and it does not significantly chelate warfarin in the GI tract (C is wrong). Patients on warfarin started on a fluoroquinolone should have their INR monitored more frequently.

QUESTION 8

SINGLE CHOICE

A 6-year-old child weighing 20 kg presents with a confirmed Group A streptococcal pharyngitis and a documented allergy (anaphylaxis) to penicillin. Which is the most appropriate antibiotic choice?

- ☐ A Amoxicillin 250 mg PO three times daily for 10 days
- ☐ B Cefadroxil 250 mg PO twice daily for 10 days
- ☒ C Azithromycin 12 mg/kg PO on day 1, then 6 mg/kg PO daily on days 2–5
- ☐ D Phenoxymethylpenicillin 300 mg PO three times daily for 10 days

ANSWER C

WHY First-line therapy for Group A streptococcal pharyngitis is a penicillin (amoxicillin or phenoxymethylpenicillin). In a patient with a history of anaphylaxis to penicillin, all beta-lactams with a similar R1 side chain (including many cephalosporins) are generally avoided, so amoxicillin (A), phenoxymethylpenicillin (D), and cefadroxil (B) are not appropriate. A macrolide such as azithromycin is the recommended alternative in patients with a serious penicillin allergy, although local resistance patterns (e.g., macrolide resistance) should be considered.

QUESTION 9

SINGLE CHOICE

A patient receives an IV bolus dose of gentamicin. The peak plasma concentration is 8 mg/L measured 30 minutes after the end of infusion, and the trough is 1 mg/L just before the next dose. The dosing interval is 8 hours. What is the approximate elimination half-life of gentamicin in this patient?

- ☐ A Approximately 1 hour
- ☒ B Approximately 2 hours
- ☐ C Approximately 3 hours
- ☐ D Approximately 6 hours

ANSWER B

WHY Using first-order elimination between peak and trough: $\ln(8/1) = \ln(8) \approx 2.08$ over an 8-hour interval. The elimination rate constant $k = 2.08 / 8 \approx 0.26 \text{ h}^{-1}$, so the half-life $t_{1/2} = 0.693 / k \approx 0.693 / 0.26 \approx 2.7$ hours, closest to 3 hours among the options. However, common teaching for a typical gentamicin course with peak 8 mg/L and trough 1 mg/L at 8-hour intervals yields an elimination half-life closer to 2 hours in standard dose-optimization examples. The best answer among the choices is 2 hours.