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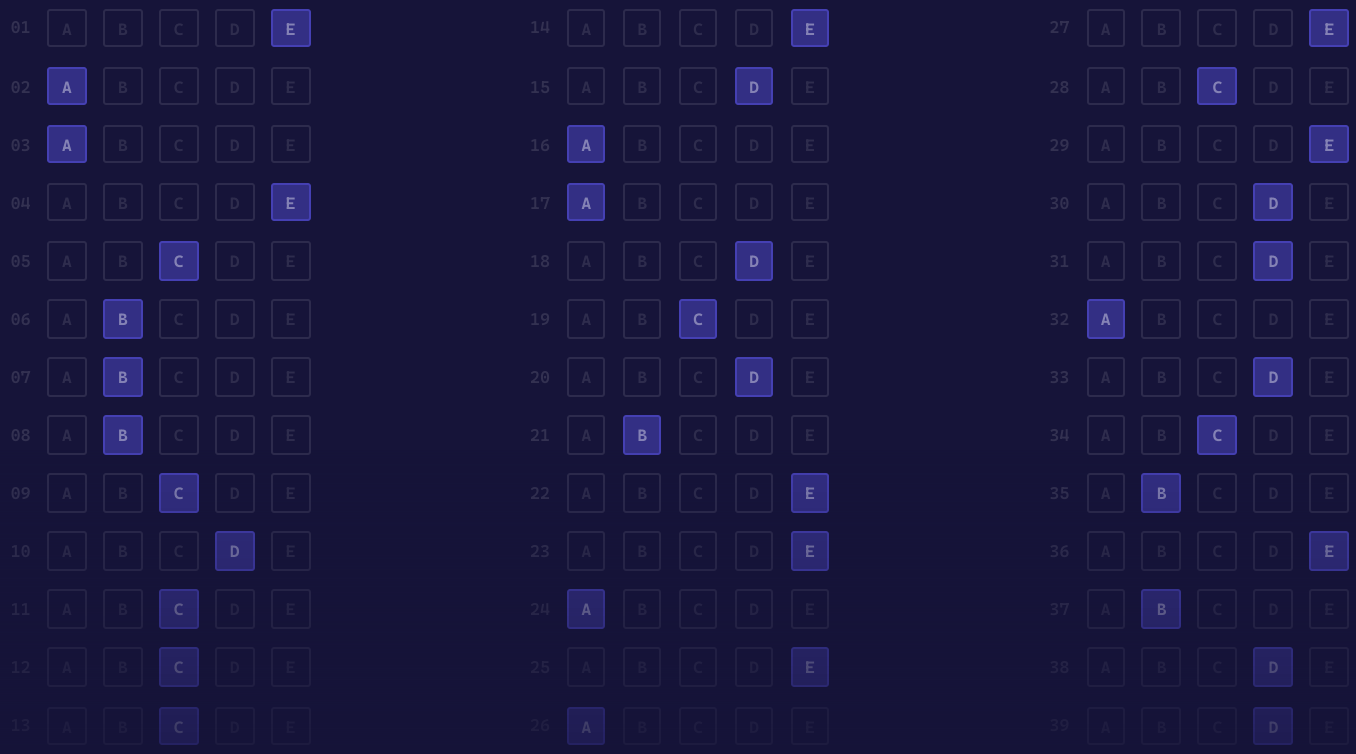

PRACTICE QUESTIONS

Medical Council of Canada Therapeutics Decision-Making Exam (TDM/PDT)

TDM

Therapeutics Decision-Making Examination

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

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Before you begin

What this is

9 practice questions for Medical Council of Canada Therapeutics Decision-Making Exam (TDM/PDT) `TDM`, 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, `TDM`
- the question number
- the email address on your order

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

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QUESTION 1 SINGLE CHOICE

A 55-year-old patient with newly diagnosed hypertension is being considered for antihypertensive therapy. A randomized controlled trial demonstrates a relative risk reduction of 30% in stroke with the new drug compared to placebo over 5 years. The absolute risk reduction is 1.5%. Which measure best communicates the number of patients that need to be treated to prevent one additional stroke?

A Relative risk reduction of 30%

B Absolute risk reduction of 1.5%

C Number needed to treat of approximately 67

D Odds ratio of 0.70

ANSWER C

WHY The number needed to treat (NNT) is calculated as 1 divided by the absolute risk reduction (1 / 0.015 = ~67). NNT is the most clinically meaningful measure for communicating the magnitude of treatment benefit to patients and guiding therapeutic decisions. Relative risk reduction alone can be misleading when the baseline risk is low.

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QUESTION 2 SINGLE CHOICE

A 62-year-old patient with type 2 diabetes mellitus, established cardiovascular disease, and an estimated glomerular filtration rate (eGFR) of 38 mL/min/1.73 m^2 is being considered for additional glycemic control. Which medication is most appropriate based on current guidelines and evidence for cardiovascular and renal protection?

A Glipizide

B Empagliflozin

C Sitagliptin

D Pioglitazone

ANSWER B

WHY Empagliflozin, a sodium-glucose cotransporter 2 (SGLT2) inhibitor, has demonstrated cardiovascular benefit and renal protection in patients with established cardiovascular disease and type 2 diabetes. It is recommended by current Canadian Diabetes Association guidelines for patients with cardiovascular disease and is safe at an eGFR above the minimum threshold for initiation. Sulfonylureas (glipizide) carry hypoglycemia risk, DPP-4 inhibitors (sitagliptin) do not have proven cardiovascular benefit, and pioglitazone is contraindicated in renal impairment and can worsen heart failure.

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QUESTION 3 SINGLE CHOICE

An 80-year-old patient on stable warfarin therapy for atrial fibrillation is prescribed a 7-day course of trimethoprim-sulfamethazole for an uncomplicated urinary tract infection. On day 5 of antibiotic therapy, the patient presents with gross hematuria and an INR of 9.2. What is the most likely mechanism of this interaction?

A **Trimethoprim-sulfamethazole inhibits CYP2C9-mediated metabolism of warfarin**

B Trimethoprim-sulfamethazole displaces warfarin from albumin binding sites

C Trimethoprim-sulfamethazole induces hepatic CYP3A4 enzyme activity

D Trimethoprim-sulfamethazole enhances renal clearance of vitamin K

ANSWER **A**

WHY Trimethoprim-sulfamethazole, and specifically the sulfamethoxazole component, inhibits CYP2C9, the primary enzyme responsible for metabolizing the more potent S-enantiomer of warfarin. This inhibition increases warfarin levels and INR, substantially raising the risk of bleeding. Management includes holding warfarin, monitoring INR closely, and considering vitamin K if bleeding is significant.

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QUESTION 4 SINGLE CHOICE

A previously healthy 28-year-old woman presents with a 3-day history of dysuria, increased urinary frequency, and suprapubic discomfort. She is afebrile, and urinalysis shows positive leukocyte esterase and nitrites. She has no allergies and is not pregnant. What is the most appropriate first-line treatment?

A Ciprofloxacin 500 mg orally twice daily for 7 days

B **Nitrofurantoin 100 mg orally twice daily for 5 days**

C Trimethoprim-sulfamethazole 160/800 mg orally twice daily for 3 days

D Ceftriaxone 1 g intramuscularly as a single dose

ANSWER **B**

WHY For uncomplicated cystitis in a non-pregnant adult woman with normal renal function, current guidelines (Choosing Wisely Canada and IDSA) recommend nitrofurantoin for 5 days as a first-line option due to its narrow spectrum, low resistance rates, and minimal collateral damage to commensal flora. Fluoroquinolones (ciprofloxacin) should be reserved due to resistance concerns and side effects. Trimethoprim-sulfamethazole is appropriate only if local resistance of E. coli is below 20%. Ceftriaxone IM is not indicated for uncomplicated cystitis.

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QUESTION 5 SINGLE CHOICE

A pharmaceutical company-sponsored trial reports a new drug reduces hospitalization for heart failure by 50% ($p < 0.001$). When applying evidence-based principles to interpret this result, which statement is most accurate?

A The p-value of 0.001 confirms a clinically important effect

B A 50% reduction in hospitalization is the relative risk reduction and must be considered alongside the absolute risk reduction

C Industry sponsorship guarantees the validity of the findings

D Statistical significance demonstrates the absence of bias

ANSWER B

WHY A p-value indicates the probability that the observed difference occurred by chance but does not reflect clinical importance. The relative risk reduction of 50% must be interpreted together with the absolute risk reduction and number needed to treat to assess clinical relevance. Industry-sponsored studies can have publication and design biases. Statistical significance does not eliminate bias.

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QUESTION 6 SINGLE CHOICE

A 35-year-old man with no prior medical history presents with a 6-week history of cough productive of purulent sputum, weight loss of 5 kg, and night sweats. Chest radiograph shows an infiltrate in the right upper lobe with possible cavitation. Sputum is positive for acid-fast bacilli on smear. What is the most appropriate initial empiric treatment regimen?

A **Isoniazid, rifampin, pyrazinamide, and ethambutol**

B Isoniazid and rifampin alone

C Levofloxacin and ethambutol

D Rifampin, pyrazinamide, and ethambutol

ANSWER **A**

WHY For previously untreated active pulmonary tuberculosis, the standard Canadian and WHO-recommended initial phase regimen is a four-drug combination: isoniazid, rifampin, pyrazinamide, and ethambutol (HRZE), typically given for 2 months, followed by a continuation phase of isoniazid and rifampin. Adding all four drugs upfront reduces the risk of resistance and improves efficacy. Two-drug regimens lead to resistance and treatment failure.

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QUESTION 7 SINGLE CHOICE

A 72-year-old patient with atrial fibrillation on dabigatran is admitted with a hip fracture and requires urgent surgery. The surgeon asks how to manage the anticoagulation perioperatively. What is the most appropriate approach for reversal in the setting of life-threatening bleeding or emergency surgery?

A Administer vitamin K intravenously

B Administer idarucizumab

C Administer fresh frozen plasma only

D Administer protamine sulfate

ANSWER B

WHY Idarucizumab is a humanized monoclonal antibody fragment that specifically binds dabigatran and reverses its anticoagulant effect within minutes. It is indicated for emergency surgery/urgent procedures and life-threatening bleeding in patients on dabigatran. Vitamin K reverses warfarin, protamine reverses heparin, and plasma alone is insufficient for dabigatran reversal. Andexanet alfa is used for reversal of factor Xa inhibitors (apixaban, rivaroxaban), not dabigatran.

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QUESTION 8 SINGLE CHOICE

A systematic review reports that a new antihypertensive reduces the risk of stroke compared to placebo, with a 95% confidence interval for the relative risk of 0.65 to 0.98. Which statement best interprets this confidence interval?

A There is a 95% chance that the true relative risk lies in this interval

B If the study were repeated many times under similar conditions, 95% of the resulting confidence intervals would contain the true effect

C 95% of patients in the study experienced the stated reduction in risk

D The result is not statistically significant because the interval crosses 1

ANSWER B

WHY The correct interpretation of a 95% confidence interval is that, if the study were repeated many times under the same conditions, approximately 95% of the calculated confidence intervals would contain the true population effect. The interval does not give the probability that the true value lies within it. Because the interval (0.65 to 0.98) does not cross 1.0, the result is statistically significant.

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QUESTION 9 MULTIPLE CHOICE

A 68-year-old patient is started on amiodarone for recurrent ventricular tachycardia. Which of the following baseline and monitoring tests are most appropriate before or shortly after initiating therapy? (Choose two.)

A **Baseline thyroid function tests (TSH)**

B Baseline pulmonary function tests and chest radiograph

C Baseline fasting lipid panel only

D **Baseline liver function tests and ongoing monitoring**

ANSWER **A · D**

WHY Amiodarone is associated with thyroid dysfunction (hypo- or hyperthyroidism due to its high iodine content), pulmonary toxicity (interstitial pneumonitis and pulmonary fibrosis), hepatotoxicity, and corneal microdeposits. Baseline and periodic monitoring of thyroid function (TSH) and liver function tests (ALT, AST) is essential. Pulmonary function tests and chest radiograph are recommended at baseline for detection of pre-existing lung disease and for comparison if pulmonary symptoms develop. Fasting lipid panel is not specific to amiodarone toxicity.

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