แบบฝึกทบทวน SIID355 Topic 8 Drug use in diabetes

จัดทำโดยวิชาการรุ่น 134 เพื่อทบทวนความรู้รายบท (Optional) ไม่ได้มีความเกี่ยวข้องกับข้อสอบจริง
และ หากมีข้อสงสัยในเฉลย/พบจุดผิดพลาดสามารถแจ้งมาได้ทางไลน์วิชาการ Premium ครับ

1) Which agent listed below is **not metabolized** and is excreted **unchanged** in urine?
A. Metformin
B. Pioglitazone
C. Sitagliptin
D. Glipizide
E. Exenatide

Answer: A
Metformin is not metabolized, no protein binding, excreted unchanged

---

2) What is the **most common side effect** of "Glipizide", especially in the elderly?
A. Hepatotoxicity
B. Lactic acidosis
C. Hypoglycemia
D. Pancreatitis
E. GI upset

Answer: C
Sulfonylureas (Particularly in elderly), long-acting forms, or renal/hepatic impairment.

---

3) A 35-year-old woman with T2DM is started on a new **injectable** drug.
One week later, she complains of nausea, anorexia, and weight loss.
Which of the following mechanisms best explains her symptoms?
A. Direct hepatic glucose suppression
B. Decreased alpha-glucosidase activity
C. Increased renal glucose excretion
D. GLP-1 receptor stimulation
E. PPAR-γ activation

Answer: D
GLP-1 agonists (e.g., liraglutide) delay gastric emptying, promote satiety, and cause GI side effects like nausea and weight loss.

---

4) A 60-year-old obese patient with type 2 DM is prescribed a drug that enhances insulin sensitivity, leads to weight gain. **Which adverse effect must be closely monitored?**
A. Lactic acidosis
B. Pancreatitis
C. Fluid retention
D. Ketoacidosis
E. GI bleeding

Answer: C
This is pioglitazone (TZD), which causes fluid retention and is contraindicated in CHF. Biguanide (Metformin) should be ruled out since it causes weight stabilization or loss.

5) A 63-year-old woman with type 2 diabetes has been on **metformin monotherapy** for several years. She now presents with **fatigue** and **numbness in her feet**.
Which of the following is the most likely co-finding in this patient?

A. Vaginal candidiasis
B. Peripheral edema
C. Macrocytic anemia
D. Microcytic anemia
E. Postprandial hyperglycemia

Answer: C

Long-term use of metformin may be associated with biochemical vitamin **B12** deficiency
Vaginal candidiasis linked to SGLT2 inhibitors; Peripheral edema typical of TZDs (e.g., pioglitazone), not metformin; Microcytic anemia suggests iron deficiency, not B12

---

6) A 47-year-old female with **erratic meal timing** requires oral antidiabetic therapy.
Which agent is most suitable and why?
A. Acarbose – due to postprandial control
B. Repaglinide – due to flexible dosing with meals
C. Glipizide – for sustained glucose lowering
D. Pioglitazone – for insulin sensitization
E. Sitagliptin – for its long duration

Answer: B
Short-acting, "one meal one dose", ideal for unpredictable meal schedules.

---

7) A 52-year-old man with type 2 diabetes mellitus has a BMI of 34, poor postprandial glucose control, and **recurrent urinary tract infections (UTIs)**.

Which of the following drugs should be avoided in his treatment plan? A. Rosiglitazone
B. Vildagliptin
C. Voglibose
D. Dapagliflozin
E. Nateglinide

Answer: D

patient has recurrent UTIs → SGLT2 inhibitors worsen the risk due to glucosuria

---

8) A 30-year-old **pregnant woman** with a history of **sulfa allergy** and **severe renal impairment (eGFR ~27 mL/min/1.73 m²)** presents with newly diagnosed T2DM.
Which of the following agents is most appropriate for her condition?
A. Glibenclamide
B. Metformin
C. Insulin
D. Acarbose
E. Pioglitazone

Answer: C

Sulfonylureas (e.g., glibenclamide) are contraindicated in sulfa allergy; metformin is generally avoided in pregnancy and severe renal impairment; pioglitazone is pregnancy category C; Acarbose is contraindicated in pregnancy;

*Insulin = **first-line in pregnancy** (safe in renal impairment and do not cross placenta)*

---

9) A 60-year-old man with poorly controlled type 2 diabetes presents to the emergency department with confusion, dehydration, and Kussmaul breathing. **Which of the following insulin preparations is most appropriate for management?**

A. Insulin lispro – Subcutaneous
B. Insulin aspart – Intramuscular
C. Insulin NPH – Intramuscular
D. Insulin glargine – Subcutaneous
E. Regular insulin – Intravenous

Answer: E

In emergency conditions such as diabetic ketoacidosis (DKA) or hyperosmolar hyperglycemic state (HHS), regular insulin is the insulin of choice due to its suitability for IV or IM administration, allowing rapid onset and close glucose monitoring.

---

10) Which insulin analogue has the highest albumin binding (~98–99%) in plasma, leading to a reduced risk of hypoglycemia with predictable pharmacokinetic?

A. Insulin glargine
B. Insulin lispro
C. Insulin detemir
D. Insulin NPH
E. Insulin glulisine

Answer: C

High albumin binding slows absorption and prolongs duration.

---

11) A 62-year-old man with type 2 diabetes has difficulty managing multiple daily injections and struggles to remember the correct timing for separate basal and prandial insulins. His physician decides to switch him to a premixed insulin formulation to simplify his regimen, so he prescribes Humalog 75/25.

Which of the following statements is correct regarding the composition of this insulin formulation?

A. 75% rapid-acting insulin
B. 25% pre-meal insulin
C. 75% regular insulin
D. 25% intermediate-acting insulin
E. 25% basal insulin

Answer: B

The 25% portion is rapid-acting insulin lispro, intended to control postprandial glucose. The 75% portion is intermediate-acting insulin (LPH), providing basal coverage.

---

12) A 58-year-old woman with type 2 diabetes is started on insulin glargine to improve her fasting glucose levels.
Which of the following statements is <u>incorrect</u> regarding this agent?

A. It has a flat, peakless profile suitable for basal coverage
B. It allows freely mixed with other insulin formulations to simplify dosing
C. It should be administered once daily for optimal glycemic control
D. It can potentially prevent nocturnal hypoglycemia
E. It is an insulin analogue produced via recombinant DNA technology

Answer: B

Insulin glargine must not be mixed *with other insulins due to pH incompatibility.*
