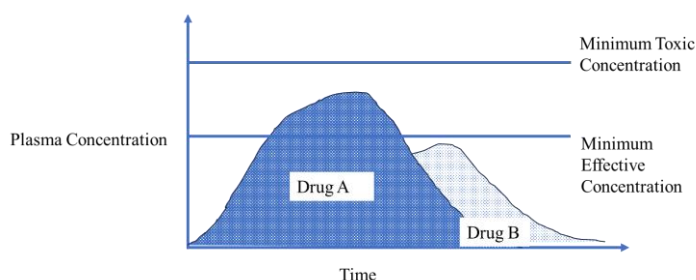


Case-based MCQ- General Pharmacology

1. A 42-year-old man with a history of motion sickness planned a cruise trip to the Andaman and Nicobar Islands. To make his journey enjoyable and mitigate nausea and vomiting during travel, the doctor has prescribed him a drug X. The most appropriate route of administration of the drug X, which ensures a prolonged effect exceeding 48 hours, would be
 - A. Oral.
 - B. Intramuscular route.
 - C. Transdermal route.
 - D. Intravenous route.
2. A 63-year-old female, known case of bronchial asthma, presented to the emergency room with increasing breathlessness, cough and fever. Her RR was 30 breaths per minute, Pulse rate was 108 beats per minute, and on inspection, the accessory muscles of respiration were working. The clinician diagnosed status asthmaticus. Utilising your pharmacokinetic knowledge, indicate the most appropriate route for the given scenario.
 - A. Inhalational route.
 - B. Intramuscular route.
 - C. Transdermal route.
 - D. Intravenous route.
3. Suppose you are a paediatrician running a private hospital, who received a 5-year-old, unconscious child brought by the parents with a history of fever and repeated convulsions. You made a diagnosis of febrile convulsions and planned to administer diazepam. Which administration route do you prefer for diazepam?
 - A. Oral route.
 - B. Intramuscular route.
 - C. Rectal route.
 - D. Intravenous route
4. A 10-year-old boy with a history of severe nausea, vomiting and diarrhoea was admitted to the emergency ward. He was moderately dehydrated, hence infused with intravenous fluids to replenish fluid loss. Which among the following is a false statement about the intravenous route?
 - A. Hypertonic fluids and pharmaceuticals with gastric irritant properties may be delivered by this route.
 - B. There is a risk of infection if proper aseptic precaution is not taken before administration of the drug.
 - C. The route has 100% bioavailability.
 - D. The route is more suitable for suspension and oily formulations.
5. A patient experiencing acute angina is being prescribed glyceryl trinitrate sublingually, as it has high first-pass metabolism. Which of the following statements accurately describes the first pass metabolism?

- A. The drugs taken orally will not exhibit first-pass metabolism.
 - B. The alternate word for first-pass metabolism is pre-systemic circulation.
 - C. In liver disorders, the bioavailability of a drug with high first-pass metabolism will be lower.
 - D. If the drug has high first-pass metabolism, the oral route is obsolete even with higher doses.
6. The following graph illustrates the plasma concentration of drug A and drug B plotted against time, prescribed for a 46-year-old male, for the treatment of insomnia. Observe the graph and apply your pharmacokinetic knowledge. As per your opinion, which drug will elicit a therapeutic response?



- A. Drug A.
 - B. Drug B.
 - C. Both.
 - D. None.
7. Mrs XYZ, a 28-year-old primigravida, received tetracycline antibiotic for Mycoplasma pneumonia in the third trimester. Which of the following fetal anomalies are expected in the baby after delivery?
- A. Phocomelia.
 - B. Cleft Palate.
 - C. Spina bifida.
 - D. Discoloured and deformed teeth.
8. A baby born with respiratory depression in a pregnant female who underwent a normal vaginal delivery. Which possible drug causes this teratogenic effect?
- A. Morphine.
 - B. Thalidomide.
 - C. Carbamazepine.
 - D. Lithium.
9. Patient diagnosed with Parkinsonism was prescribed Levodopa, a prodrug of dopamine. The following statement is false about a prodrug.
- A. A prodrug is an inactive compound that gets metabolised in the body into an active form.
 - B. It enhances the bioavailability.
 - C. Prodrug produces a longer duration of action.
 - D. It can potentiate the adverse effects.

10. Parkinsonism is a movement disorder caused by a deficiency of Dopamine in the substantia nigra. For its treatment, instead of Dopamine, Levodopa is used. Because-
- A. Levodopa is a prodrug and lipid-soluble compound that crosses the blood-brain barrier and is metabolised to dopamine.
 - B. Dopamine can cross the blood-brain barrier but induces high toxicity.
 - C. Levodopa directly binds to the dopaminergic receptor.
 - D. Levodopa is a water-soluble compound that crosses the blood-brain barrier easily.
11. A recently married couple planned not to have a baby for a couple of years and consulted a gynaecologist for contraceptive methods. The doctor prescribed oral contraceptives for a female partner. A month later, she was diagnosed to have active pulmonary TB for which she was initiated on an anti-TB regimen that contains Rifampicin. After 2 weeks of starting of Rifampicin-containing regimen, the patient became pregnant. The reason for the failure of contraception is-
- A. Rifampicin inhibited the enzyme that reduced the therapeutic concentration of OC pills, leading to therapeutic failure.
 - B. Rifampicin-containing regimen displayed the OC pills from the plasma binding site, leading to poor concentration
 - C. Rifampicin induced the enzyme that reduced the therapeutic concentration of OC pills, leading to therapeutic failure.
 - D. Rifampicin reduced the absorption of OC pills.
12. A 65-year-old male with known COPD was on inhaled beta agonist, corticosteroids and theophylline therapy. As the patient had bacillary dysentery, he was asked to take Ciprofloxacin 500 mg twice a day. After 6 hours of ciprofloxacin consumption, the patient started complaining of gastric upset, palpitations and tremors. The possible reason for these symptoms is-
- A. Ciprofloxacin inhibited the enzyme that increased the therapeutic concentration of Theophylline, causing side effects.
 - B. Ciprofloxacin-containing regimen displayed theophylline from the plasma binding site, leading to higher concentration.
 - C. Ciprofloxacin induced the enzyme that increased the therapeutic concentration of Theophylline, causing side effects.
 - D. Ciprofloxacin increased the metabolism of theophylline, which led to theophylline toxicity.
13. A 24-year-old primigravida diagnosed with premature labour. The gynaecologist recommended initiating a medication to avoid neonatal jaundice. The most probable drug could be.
- A. Phenobarbitone
 - B. Diazepam
 - C. Dexamethasone
 - D. Salbutamol
14. Adrenaline and histamine are nullifying each other's action by acting on α_1 and H_1 receptors, respectively. This explains which antagonism type?
- A. Physical
 - B. Chemical

C. Physiological

D. Pharmacological

15. A 30-year-old female undergoing caesarean section under spinal anaesthesia developed hypotension. The anaesthetist administered an injection of Ephedrine 10 mg IV, which raises blood pressure to a normal level. After 15 minutes, the patient developed recurrent hypotension for which Ephedrine 10 mg intravenously was repeated 2-3 times over a short period of time. Despite intravenous Ephedrine, blood pressure hardly rises this time. This phenomenon is called as—

A. Tachyphylaxis

B. Tolerance

C. Antagonism

D. Synergism

In the given scenario, what would be the best choice of the drug?

A. High dose of Ephedrine

B. Adrenaline

C. Phenylephrine

D. Hydrocortisone

16. If 40% of Drug A is eliminated at every unit time and the plasma half-life of the drug is a constant, then the drug follows -----order kinetics.

A. First

B. Zero

C. Mixed

D. First and Zero

17. A patient with septic shock was started on Noradrenaline (2mg/ml) infusion. The plasma half-life of Noradrenaline is 2 minutes. How much time will it take to reach a steady-state plasma concentration where the rate of administration is equivalent to the rate of elimination?

A. 4 minutes

B. 6 minutes

C. 10 minutes

D. 12 minutes

18. A 33-year-old male admitted to the General Medicine ward for pneumonia developed anaphylactic shock after administration of injection Cefotaxime. You are a CRRI posted in the department want to report this ADR. Among the following, which statement is correct with respect to ADR reporting?

A. A CRRI cannot report the ADR

B. A CRRI can report this ADR

C. Only the doctor in charge has to report ADR

D. Only the staff nurse on duty has to report this ADR

19. A 55-year-old male diagnosed with Parkinsonism initiated with a fixed dose combination of Levodopa + Carbidopa. Which of the following is NOT a prerequisite for rational FDC use?

A. Both drugs should have similar pharmacokinetic properties ($t_{1/2}$, A_{vd}).

B. The combination enhances the efficacy through synergistic action.

C. The combination does not prevent drug resistance in infectious diseases.

- D. The FDC improves compliance.
20. If a drug A has LD_{50} of 20mg and ED_{50} of 10mg. Among the following, which statement is not true about the therapeutic index?
- A. The therapeutic index of drug A is 2.
 - B. Drug A has a good margin of safety.
 - C. Drug A has a narrow margin of safety.
 - D. Therapeutic drug monitoring is not required for drug A.

Answers: 1-C, 2-A, 3-C, 4-D. 5-B, 6-A, 7-D, 8-A, 9-D, 10-A. 11-C. 12-A, 13-A, 14-C, 15-A & C, 16-A, 17-C, 18-B, 19-C, 20-C.