Marks - 2

1) Enlist various type of samples used for analysis in TDM.

⇒ ⊙ Blood / plasma.
⊙ Urine.
⊙ Saliva

2) What do you understand by drug tolerance and physical dependency.

⇒ Drug tolerance → It refers to the requirement of the higher dose of the drug to produce a given response. Tolerance is a persons diminished response to a drug, which occurs when the drug is used repeatedly and the body adapts to the continued presence of the drug.

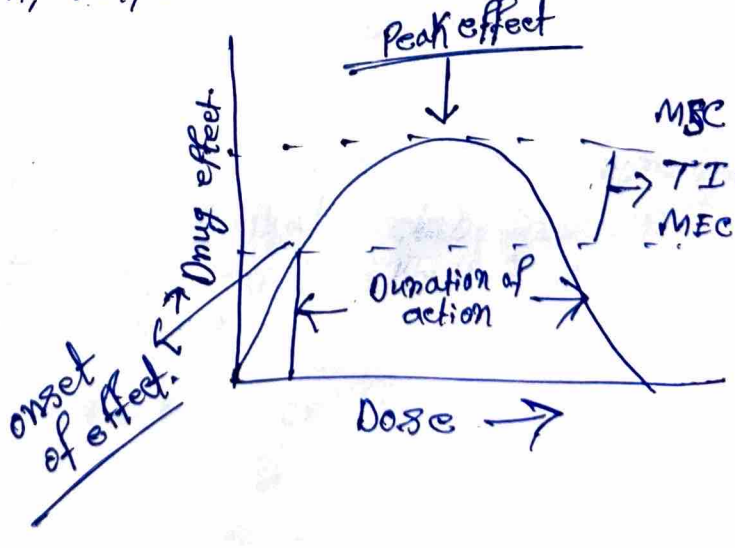
Physical dependency

Physical dependency is a physical condition caused by chronic use of a tolerance-forming drug in which abrupt or gradual drug withdrawal causes unpleasant physical symptoms.

3) Define narrow therapeutic index with example.

⇒ Those drugs where small differences in dose or blood conc may lead to dose and blood conc dependent serious therapeutic failure or adverse drug reactions.

Ex → Quinidine, levothyroxine, warfarin, Digoxin, Heparin, Valproic acid.



4) Define TDM. Name any four Drugs that require TDM.

⇒ TDM is based on the principle that for some drugs there is a close relationship blw the plasma level of the drug and its clinical effect.

The drug narrow therapeutic range. A direct relationship exists blw the drug or drug metabolite levels.

Drugs → Digoxin
phenytoin
lithium,
valproic acid.

5) Write the protocol for TDM of a drug.

⇒ ⊙ Title of the study / Project.
⊙ Investigators:
⊙ place of the study.
⊙ patient recruitment place.
⊙ Need for TDM study.
⊙ objective of the study.
⊙ Criteria for selection of patients.
⊙ patient history.
⊙ Instrument for measurement of drug level.
⊙ Report preparation.
⊙ clinical interpretation.

6) Give any four indications for TDM.

⇒ ⊙ patient response is inadequate clinical response.
⊙ Drug toxicity.
⊙ Individual patient response.
⊙ poisoning.

7) Why is TDM necessary for digitoxin?

⇒ Digitoxin is a narrow therapeutic range drug. it is a direct relationship exists blw the drug or drug metaboli te levels in plasma and the pharmacological or toxic effect. large individual variability in steady state plasma concn.

8) Explain the reasons for monitoring drug levels.

⇒ Maximizes efficacy.
Avoids toxicity.
identifies therapeutic failure.
Facilitates adjustment of dosage.
identify poisoning, drug toxicity and drug abuse.

9) Enumerate the factors influencing dialyzability of drugs.

⇒ ① molecular size.
① Protein binding.
① volume of distribution.
① water solubility.
① plasma clearance.

10) Enumerate the causes for renal failure.

⇒ ① Diabetes.
① High blood pressure
① Glomerular disease.
① polycystic kidney disease.
① Urinary tract obstructions.
① Medications.
① Other conditions.

11) Give any four pharmacokinetic parameter changes observed in the renal failure patients.

⇒ ① AUC (area under the curve)
① Cmax (peak conc^n)
① CLR (Renal clearance)
① V_D (volume of distribution)

12) List the markers used in the measurment of GFR.

⇒ Exogenous markers.
→ inulin, Radioactive tracers.
Endogenous markers.
→ Serum creatinine.
cystatin C
Beta trace protein.

13) Give any four ideal characteristics of the marker drugs to be used for GFR measurment.

⇒ ① Constant rate of production.
② No tubular reabsorption.
③ No external elimination or metabolism
④ Freely filterable at the glomerulus.
⑤ Availability of an accurate.

14) Adv and Dis of inulin as a Marker.

⇒ ① Adv

1) It promotes digestive health.
2) It controls blood sugar.
3) It could potentially lower our cancer risk.
4) Help treat inflammatory bowel disease.
5) Improve mineral absorption and bone health.

Dis

1) Higher cost than human insulin.
2) Fewer safety profile data.
3) increased risk of hypoglycaemia.
4) Absence of clinical studies.

15) Give the Jellife's equation for the measurment of Creatinine clearance.

⇒ $$Crcl\ (ml/min) = \frac{[98 - 0.8 \times (age - 20)] \times [1 - (0.01 \times gender)] \times (BSA/1.73)}{(Scr \times 0.0113)}$$

BSA → Body Surface area.
Scr → Serum Creatinine.

16) Give the Cockraft and Gault's equation, MDRA equation.

⇒ Cockraft - Gault's

$$\frac{(140 - Age) \times IBW}{72 \times Serum\ creatinine} \times \text{multiply by } 0.85 - mL/min$$

Ideal body weight female = 45.5 Kg + 2.3 Kg.

Ideal body weight male = 50 Kg + 2.3 Kg.

MDRD

$$GFR = 175 \times (Scr)^{-1.154} \times (Age)^{-0.203} \times (0.742 \text{ if female}) \times (1.212 \text{ if African American})$$

children

$$eGFR = K \times \frac{(\text{height in cm})}{\text{Serum Cr.}}$$

$K = 0.33$ in preemie infants.

$K = 0.45$ in term infants to 1 year.

$K = 0.55$ in child 13 years of age.