

Sept 2010
QUESTION 20

Outline the pharmacokinetic consequences of old age. Illustrate your answer with examples

Pharmacokinetic changes

Absorption

Skin

faster absorption of transdermal drugs such as fentanyl

GIT

less gut motility may delay absorption

Distribution

Less total body water and lean body mass

water soluble drugs (digoxin) have smaller Vd

higher central compartment concentration

Increased fat content %

fat soluble drugs (diazepam) have higher Vd

Reduced albumin

the free fraction of protein bound drugs (warfarin) is increased

Reduced cardiac output

reduced organ flow

altered redistribution phase

important in drug termination (thiopentone)

Metabolism

Liver is smaller with less blood flow

high extraction drugs (Ca channel blockers) have reduced clearance

Other processes unaltered

Elimination

Reduced GFR / nephrons / renal blood flow

renal drug excretion slowed

unmetabolised drugs (aminoglycosides) or active metabolites have prolonged activity