**Question 1**

Regarding drug toxicity and the foetus, which drug-effect pairing is correct

A Alcohol - Ebstein's anomaly

B Thalidomide - neural tube defects

C ACE inhibitors - renal failure

D Sodium valproate - cleft palate

Explanation C

Thalidomide causes phocomella-shortend or absent long bones and internal malformations. Alcohol causes fetal alcohol syndrome and neurobehavioural abnormalities. Valproate causes neural tube defects, cardiac and limb malformations. Warfarin causes hypoplastic nasal bridge and chondrodysplasia in the 1st trimester; CNS malformations in the 2nd trimester and increased risk of bleeding in the 3rd trimester. Lithium causes Ebstein’s anomaly. Phenytoin causes fetal hydantoin syndrome. Streptomycin causes eighth nerve toxicity

**Question 2**

Which of the following drugs is safest in a normal pregnancy?

A Warfarin

B Enoxaparin

C Heparin

D Aspirin

Explanation B

Thalidomide causes phocomella-shortend or absent long bones and internal malformations. Alcohol causes fetal alcohol syndrome and neurobehavioural abnormalities.

Valproate causes neural tube defects, cardiac and limb malformations. Warfarin causes hypoplastic nasal bridge and chondrodysplasia in the 1st trimester, CNS malformations in the 2nd trimester, and an increased risk of bleeding in the 3rd trimester.

Lithium causes Ebstein’s anomaly. Phenytoin causes fetal hydantoin syndrome. Streptomycin causes eighth nerve toxicity.

Use of nonsteroidal anti-inflammatory drugs during the third trimester of pregnancy should be avoided due to effects on the foetal cardiovascular system (closure of the ductus arteriosus). Aspirin use in pregnancy has been associated with alterations in both maternal and foetal haemostasis. In addition, high doses have been associated with increased perinatal mortality, intrauterine growth retardation, and teratogenic effects. During the first two trimesters of pregnancy, aspirin should only be given during pregnancy when clearly needed and when benefit outweighs risk

Note: New studies suggest a low dose aspirin for pregnant women with moderate to high risk preeclampsia. According to pharmacology prescribing, it is still classified as a group C drug. It should definitely be avoided in late pregnancy

Uptodate reference

LMW heparins — A LMW heparin is the preferred anticoagulant for most pregnant women. This is largely because available evidence has shown these agents to be effective and safe for the foetus. LMW heparins do not cross the placenta and do not cause foetal anticoagulation

A systematic review of studies of the use of LMW heparin for prevention or treatment of VTE in pregnancy concluded that LMW heparin was both safe and effective. There were no maternal deaths and no cases of heparin-induced thrombocytopenia.

LMWH is preferred over UFH for the prevention and treatment of VTE owing to its ease of use, as well as it greater efficacy and safety profile

Unfractionated heparin is an acceptable and less expensive alternative to LMW heparin. It may be more appropriate than LMW heparin during stages of the pregnancy when rapid temporal control of anticoagulation is required (e.g., near the time of delivery, if surgery is required).

Unfractionated heparin is also preferred over LMW heparin in patients with severe renal insufficiency because LMW heparin metabolism is exclusively renal, while metabolism of unfractionated heparin is renal and hepatic.

Unfractionated heparin does not cross the placenta, and available evidence has not indicated any harmful effects on the foetus

Interestingly using MIMS online- both drugs are category C

Other sites report heparin C and enoxaparin B.

Note: I have changed the answer to enoxaprin. I would suggest seeking expert advice form specialist before given any anticoagulant to a pregnant patient

**Question 3**

In which option is the agent correctly matched with the teratogenic effect?

A Warfarin - neural tube defects

B ACE inhibitors - hydronephrosis

C Lithium - Epstein anomaly

D Sodium valproate - cleft palate

Explanation C

Thalidomide causes phocomella-shortend or absent long bones and internal malformations. Alcohol causes fetal alcohol syndrome and neurobehavioural abnormalities. Valproate causes neural tube defects, cardiac and limb malformations. Warfarin causes hypoplastic nasal bridge and chondrodysplasia in the 1st trimester, CNS malformations in the 2nd trimester, and an increased risk of bleeding in the 3rd trimester. Enoxaprin can be used in the second trimester but it is not as safe as heparin. Lithium causes Ebstein’s anomaly. Phenytoin causes fetal hydantoin syndrome. Streptomycin causes eighth nerve toxicity

Extra; Valproic acid has been associated with a variety of major and minor malformations, including a 20-fold increase in neural tube defects, cleft lip and palate, cardiovascular abnormalities, genitourinary defects, developmental delay, endocrinological disorders, limb defects, and autism. Even Katzung mentioned spina bifida,cardiovascular,orofacial and digital abnormalities. It could still be argued that option "Sodium valproate - cleft palate" is correct, though spina bifida is a more common teratogenic effect of Na valproate and, I agree Epstein anomaly is almost pathognomonic for Lithium teratogenic effect.

**Question 4**

Which of the following drugs is the safest in pregnancy?

A Phenytoin

B Lithium

C Heparin

D strptomycin

Explanation C

Thalidomide causes phocomella-shortend or absent long bones and internal malformations. Alcohol causes fetal alcohol syndrome and neurobehavioural abnormalities. Valproate causes neural tube defects, cardiac and limb malformations. Warfarin causes hypoplastic nasal bridge and chondrodysplasia in the 1st trimester, CNS malformations in the 2nd trimester, and an increased risk of bleeding in the 3rd trimester. Enoxaprin can be used in the second trimester but it is not as safe as heparin. Lithium causes Ebstein’s anomaly. Phenytoin causes fetal hydantoin syndrome. Streptomycin causes eighth nerve toxicity

**Question 5**

Regarding drugs in the elderly, which of the following statements is correct?

A Side effects are proportional to the amount of medication

B The elderly have an increased lean body mass

C Phase II biotransformation is much poorer

D The elderly have higher serum albumin

Explanation A

The increased effects of the drugs are due to a greater change in pharmocokinetics than pharmacodynamics. There is a greater change is phase one reactions. Phase one reactions are hydration, oxidation and reduction. Phase two reactions are glucuronidation, acetylation, glutathione conjugation, glycine conjugation, sulfate conjugation, methylation, and water conjugation. They have a reduced body mass but an increase in fat percentage. The elderly have a decrease in albumin concentration

**Question 6**

Which of the following drugs is safest in pregnancy?

A ACE inhibitor

B Warfarin

C Phenytoin

D Heparin

Explanation D

Thalidomide causes phocomella-shortend or absent long bones and internal malformations. Alcohol causes fetal alcohol syndrome and neurobehavioural abnormalities. Valproate causes neural tube defects, cardiac and limb malformations. Warfarin causes hypoplastic nasal bridge and chondrodysplasia in the 1st trimester, CNS malformations in the 2nd trimester, and an increased risk of bleeding in the 3rd trimester. Enoxaprin can be used in the second trimester but it is not as safe as heparin. Lithium causes Ebstein’s anomaly. Phenytoin causes fetal hydantoin syndrome. Streptomycin causes eighth nerve toxicity

**Question 7**

Neonates have which of the following?

A Increased hepatic enzymes

B An increased clearance of drugs by glomerular filtration

C An increased total body water

D Increased protein binding

Explanation C

Neonates have a decreased clearance of drugs by glomerular filtration; decreased hepatic enzyme concentration and a decreased protein binding capacity

**Question 8**

Elderly people have reduced hepatic clearance of which of the following drugs?

A Tolbutamide

B Prazosin

C Warfarin

D Salicylate

Explanation A

Reduced hepatic clearance of certain drugs in the elderly include: alprazolam, barbiturates, diazepam, imipramine, propanolol, quinidine, theophylline, meperidine. No age related difference: ethanol, INH, lignociane, lorazepam, salicylate, warfain, nitrazepam, oxazepam, parzocin.

**Question 9**

Which of the following drugs is a category A drug in pregnancy?

A Heparin

B Dicloxacillin

C Sulfasalazine

D Metoprolol

Explanation C

Panadeine (in Australian TGA, Therapeutic Goods Administration, in spite of the fact it contains codeine), Cephalexin, chloromycetin ear drops, nitrofurantoin, metoclopramide, sulfasalazine= A

Dicloxacillin, vancomycin= B2

Panadine (in American FDA) Oxycodone, clexane/heparin, phenergan, metoprolol= C

**Question 10**

The use of magnesium in the treatment of pre/eclampsia in pregancy, which is true?

A Large doses are given only by IM route

B IVI dosing can always be given as a push

C Flushing and headaches are severe side effects

D Decreased tendon reflexes indicates toxicity

Explanation D

Magnesium sulfate is indicated for the prevention and control of seizures in severe toxemia of pregnancy. When used judiciously it effectively prevents and controls the convulsions of eclampsia without producing deleterious depression of the central nervous system of the mother or infant.

In severe pre-eclampsia or eclampsia, the total initial dose is 10 to 14 g of Magnesium Sulfate. To initiate therapy, 4 g of Magnesium Sulfate may be administered intravenously. The rate of I.V. infusion should generally not exceed 150 mg/minute, except in severe eclampsia with seizures. Simultaneously, 4 to 5 g of Magnesium Sulfate may be administered intramuscularly into each buttock using undiluted 50% Magnesium Sulfate Injection. After the initial I.V. dose, some clinicians administer 1 to 2 g/hour by constant I.V. infusion.

Subsequent intramuscular doses of 4 to 5 g of Magnesium Sulfate may be injected into alternate buttocks every four hours, depending on the continuing presence of the patellar reflex-absence of the reflex indicate toxicity, adequate respiratory function, and absence of signs of magnesium toxicity.

The adverse effects of parenterally administered magnesium usually are the result of magnesium intoxication. These include mild reactions: flushing, sweating and more severe reactions of hypotension, depressed reflexes, flaccid paralysis, hypothermia, circulatory collapse, cardiac and central nervous system depression proceeding to respiratory paralysis.