

## SAQ 1

The triage nurse rings you regarding a 32 year old with diabetes and bipolar disorder who is a frequent presenter to your emergency department. She often presents with disruptive behaviour but the nurse is concerned that today she appears disorientated, ataxic and complains of nausea and vomiting for the last two weeks.

Temp 37.4  
HR 110  
BP 90/60  
RR 22  
sats 97% OA

Her lithium level is 3 mmol/L

1. List four potential causes you would consider in this patient that may have resulted in lithium toxicity?

pre-renal impairment: dehydration  
pregnancy with hyperemesis  
UTI  
lithium induced nephrogenic diabetes insipidus  
DKA/HHS  
drug interaction with impaired renal excretion - NSAIDs  
hyponatraemia  
acute overdose in the setting of chronic ingestion

2. A urine bHCG confirms pregnancy, and a UTI. List four antibiotics used to treat UTI and discuss why you would or would not use them in pregnancy.

### Safe

nitrofurantoin (avoid after 36/40)  
amoxicillin (may be resistant, depends on local sens but safe in preg)  
trimethoprim (after the first trimester, folic acid antagonist may increase neural tube defects in first trimester)  
cephalexin (broad spectrum but safe in pregnancy)

### Less optimal

tetracyclines - tooth discolouration  
norfloxacin - renal abnormalities  
ciprofloxacin - avoid in pregnancy

3. Your 4th year student asks you about the role of charcoal in lithium overdose. You explain that charcoal does not bind lithium. Name 3 classes of drugs seen in overdose that are not bound by charcoal and give two examples of each.

toxic alcohols - methanol, ethylene glycol, isopropyl glycol, ethanol  
heavy metals - iron, lead, potassium, mercury, arsenic, cyanide  
acids/alkali

4. What alternative enhanced elimination technique may have a role in lithium toxicity?

haemodialysis

5. Name 3 toxicokinetic or toxicodynamic features of a drug that make it amenable or appropriate to this method of enhanced elimination, and 2 other drugs toxicities where the method plays a role.

small Vd  
low protein binding  
small molecular weight  
life threatening  
no effective antidote

carbamazepine  
toxic alcohols  
sodium valproate  
theophylline  
phenobarbitone  
salicylate  
potassium

6. You find on questioning that it is likely she is 16/40 pregnant, homeless and with no regular medical care. List and expand briefly on 4 issues that should be discussed with this woman, include other services that may need to be involved.

pregnancy medical care - obstetric physician input given ongoing need for diabetes control and likely lithium requirement during pregnancy - lithium being teratogenic (tricuspid valve abnormalities)

Tie in with GP

psychiatric care and support during pregnancy - tie in with maternal mental health  
maternity care, including scans

social supports - social worker involvement

pregnancy advice - safe behaviours/listeria avoidance/drugs in pregnancy/smoking/alcohol