

20 Questions – Drug Reactions

1. Responding on a 'seizure', you find a 20 year old male awake, alert, and able to follow commands, but with his neck in fixed extension, and his eyes upwardly deviated. He is unable to speak. What are some possibilities?
2. Responding to another 'seizure', you find a 50M unresponsive. He is hot and sweaty. He began Prozac treatment for obsessive-compulsive disorder two days ago after clomipramine (a TCA) failed (he discontinued this medication last week). What could result from the interactions of these two drugs?
3. Responding to a patient with a seizure disorder possibly from prematurity (but not seizing) you find a lethargic 7 month old. Mother noted progressive lethargy for the past several hours. The patient is on Tegretol, and mother states that he is getting the normal dose. What is very important about the form in which the drug is given?
4. At a private residence in Eden Prairie (NOT a seizure), a 40 year old male with no psych history holds his dog hostage at gunpoint. He suffers numerous dog bites. You find him to be alert and oriented, but persistently talking about the pets that are 'coming to get him'. His only medication is Pepcid (famotidine), started 10 days ago for some epigastric discomfort. His wife reports that he was normal a few days ago, but has become progressively more bizarre. Could this be a drug reaction, as the wife insists it 'must be'?
5. A high school student with asthma has a respiratory arrest shortly after taking a medication that a friend gave her for an upset stomach. What did the medicine likely contain?
6. You tell your partner to give 100mg of lidocaine to the 60 year old male with stable ventricular tachycardia. His wife tells you that he is allergic to novocaine, and 'nearly died' when he got it once. What should you do?
7. You give the lidocaine, and repeat the same dose on order from the resident in the ER. The wife reminds you that the patient has 'severe liver disease'. What might happen next?
8. Luckily, the patient does not seize, but comes around, and complains of chest pain. You ask him to take an aspirin. He refuses, saying he is already on Coumadin and 'just was in the right range'. What do you tell him?
9. You are about to give the patient a nitro spray when he wonders if all the recent sex was contributing to his heart trouble. What should you be sure to ask about?
10. A 15-year-old calls the ambulance because she feels 'weird' after taking a friend's amoxicillin. She is very anxious because she had 'antiphylaxis' to penicillin as a child. She looks anxious, but well, with normal vital signs, chest exam, and no rash 1 hour after taking the medication. What is her risk of significant reaction?
11. A patient with an eye injury is given Alcaine. The relief is so wonderful that he steals your bottle when you're distracted by your partner's driving skills (or lack thereof). What is the danger of continued use of these drops?
12. You are treating a patient who has severe COPD and is on multiple inhalers and theophylline because his doctor is old school. He is currently in a SVT, rate of 180. Recall the dosage interactions with adenosine as you draw it up.
13. At Augustana, a patient has developed severe hematuria. The staff feels that the patient's UTI is not responding to the Bactrim he's been on for a week. The patient is also on Coumadin, digoxin, lisinopril, and colace. What is a potential problem here?
14. Clearing from this call, you respond on another hematuria to a private residence, where an African-American 5-year-old has become weak and passed very dark urine. The child's mucous membranes are pale, she is tachycardic, slightly tachypneic, and has passed brown

- urine. The parents feel that she is not responding to the Bactrim that she was started on yesterday for a UTI. What could be happening?
15. Called on an allergic reaction, you find a 45-year-old female with a grossly swollen tongue. She has a history of HTN and is "on some meds". Her chest is clear, and there is no rash. Vital signs are normal. The patient and partner deny any known allergen exposure. What is the number one cause for this problem?
 16. How do you treat a patient like the one in #15.
 17. A 25yr old with a history of schizophrenia is found unresponsive and pulseless. The EKG shows a wide complex tachycardia that looks similar to VT, but the QRS looks odd because it seems to vary in size. What other meds are you keenly interested in knowing about?
 18. A 25 year old athletic male calls an ambulance for severe abdominal pain and vomiting blood. What is the number one contributing medication to this type of problem? He says he lifts a lot and has been sore, so he takes meds for it frequently.
 19. At a private residence on a 'one sick', you find an agitated, confused elderly male. According to his family he has never been like this before. He is moderately hypertensive and tachycardic, with warm, dry skin and somewhat dilated pupils. Playing a hunch, you ask about new medications. What class of medications could likely cause this picture?
 20. You correctly diagnosed anticholinergic toxidrome in #19 secondary to the patient's meds. What is the key difference between anticholinergic vs. sympathomimetic? They look **very similar**, but there is one key difference on physical exam.

20 Answers – Drug Reactions

NOTE: – Do not limit your differential in cases of altered mental status to certain drugs, etc. and fail to check the usual suspects (oxygen, glucose, etc.). I'll assume that you did those things in the answers to the questions. The differential diagnosis in cases such as these is often broad, with many nasty possibilities, but your hunches may be invaluable to the receiving hospital staff. Try to think about drug related problems in relation to side effects, allergic and other reactions, changes in effect due to drug interactions or changes in body function (eg: dehydration, liver disease, etc.) that may cause their levels to be altered, and major drug-drug interactions that produce new signs and symptoms. Good drug histories include drugs taken (including over the counter!), recent changes in drugs / doses, recently taken drugs (past few weeks), and new illnesses.

1. Atypical seizure is possible, but unlikely, given that he is alert despite both sides of his face/head being involved. Neck infection, toxic ingestion, botulism, certain other nervous disorders, rabies, trauma with torticollis, and other diagnoses are possible, but the most likely cause is a **dystonic reaction**. Dystonic reactions occur after administration of certain psych and anti-nausea drugs including olanzapine, haldol, compazine, reglan, and others. It is very frightening to experience as well as witness, but is easily treated with Benadryl or other anti-histamines. Often beginning with a sensation of the tongue 'not working', it spreads to involve neck, ocular, and sometimes skeletal muscles. Mental status should be normal (though they will be anxious!). It may reoccur if the patient does not stay on Benadryl for a day or so. *Interestingly, it is more common after oral medications than IV.*
2. This patient probably has serotonin syndrome. This syndrome presents when drugs (especially antidepressants) that act on serotonin levels in the brain are combined and result in overstimulation of serotonin receptors. Fatal interactions have occurred with the use of cough syrup (dextromethorphan) and a tricyclic antidepressant, as well as other drugs. Reactions have occurred when a new drug was started up to a month after the

interacting drug was stopped! Basically, if you find an unresponsive patient with **rigid extremities** and/or **clonus** who is on antidepressant/psych medication, suspect this or neuroleptic malignant syndrome. Both are nasty, and treated mainly with supportive management (ABCs), muscle relaxants, and **cooling**. Luckily, this is quite rare, but often unrecognized when it does occur!

3. If the child is getting suspension, the carbamazepine is solid particles in suspension. *If the bottle is not shaken each time before the dose is given, the concentration gets higher and higher in the remaining liquid.* This child probably has overdosed on tegretol despite getting his 'usual' dose.
4. In fact, it may be. This man is quite old to be having a first psychotic break, so a detailed workup will need to be done, but quite possibly it will turn out to be the Pepcid, which has been described to (along with many other drugs) to cause acute psychosis, especially in older folks.
5. Aspirin. This is a true case in which the patient was given Alka-Seltzer by a well-meaning classmate. These patients often have the classic triad of **asthma, nasal polyps, and aspirin sensitivity**. Luckily, the patient survived.
6. Give the lidocaine. Nearly all of the allergies to 'novocaine' and other agents are actually allergies to methylparaban, the **preservative** in the solution. Cardiac lidocaine (unlike anesthetic lidocaine) does not contain this agent, and can be safely given. As always be prepared if there is a reaction.
7. Remember that liver function falls by 40% by age 65-70, hence the reduction in dose in the elderly, and also a reduced dose in patients with liver disease. Reduced liver function means that neurotoxic levels of lidocaine may accumulate, which may cause speech problems, ataxia, and even **seizures**.
8. Coumadin use does not contraindicate use of aspirin in ischemic heart disease. Coumadin is designed to prevent clots primarily in the venous system and heart chambers. Aspirin prevents platelet activity, which contributes greatly to clot in arteries (e.g.: coronary arteries). Coumadin lacks this anti-platelet effect, which is why aspirin is still very important. The patient will be at increased risk for bleeding for up to a week, but this is usually not a problem unless the patient is a skydiver, circus clown, etc.
9. Viagra (sildenafil) or Cialis (tadalafil). Multiple deaths have been reported with the use of nitrates and these medications together, as severe, refractory hypotension develops. According to studies, and our experience, we fail to ask about this when treating males with chest pain. The medications for erectile dysfunction act as nitrates as well, which is why it can be very dangerous with nitro.
10. Minimal. True anaphylaxis develops often within minutes, and almost always within an hour. Interestingly, among patients with anaphylaxis to penicillin as children who received a penicillin (or other 'cillin) as adults, less than 10% had a significant reaction. While we would recommend not continuing on the amoxicillin, the patient is also unlikely to develop life-threatening complications.
11. Ongoing use of ocular anesthetics not only encourages additional injury (since you can't feel your fingernail grinding away at your cornea anymore), but prevents corneal healing, often resulting in corneal ulcers and could lead to blindness.
12. Patients on theophylline are likely to be adenosine-resistant. A very high dose may be required, or the patient may be simply refractory. Conversely, patients on tegretol (carbamazepine) are likely to be quite sensitive to adenosine, and may have longer periods of sinus arrest.

13. Unfortunately, multiple antibiotics including the quinolones (cipro, etc.) and sulfa drugs interact with Coumadin. Bactrim increases the anticoagulant effect, thus increasing the chance of bleeding.
14. Bactrim, among its other attributes, is an oxidant. About 5% of the African-American population is variably deficient in an enzyme called G6PD. G6PD acts to protect red blood cells from being stressed and bursting when exposed to nitrates, sulfa drugs, and other oxidants. When levels of this enzyme are very low, such stress can lead to massive hemolysis of red blood cells. Severe anemia, renal failure, and heart failure can develop.
15. Angiotensin-converting enzyme inhibitors (ACE inhibitors) (usually drug names ending in –pril, like captopril, lisinopril, etc.) cause angioedema in sporadic cases. These drugs have become the number one cause for angioedema, followed by an inherited form. It can also be due to allergens such as stings to the lip, and ingested foods etc. The symptoms are very localized, usually to the tongue and/or lips and not associated with bronchospasm, rash, or other of the usual allergic signs. However, they can still occlude the airway in severe cases.
16. Generally, you are safe to treat these as an allergic reaction, though if the patient is on an ACE-I and there has been no exposure, you may wish to consult with medical control. Epinephrine and Benadryl are of no proven benefit. Though probably not harmful (unless the epi causes cardiac ischemia). Be cautious with this, especially if there is no obvious sign of allergic reaction. We often will try those meds in case there is some simultaneous allergic component. You should calm the patient, provide oxygen, and allow the patient to sit in a position of comfort (usually bolt upright). Intubating these patients is quite difficult, and is often done fiber optically. If total obstruction does occur, and the patient is apneic try ventilating with a bag / mask or positive pressure with an oral airway or a nasal airway, and attempt oral intubation as per usual protocol. Rapid transport!
17. Primary monomorphic ventricular dysrhythmias are extremely rare in this age group, and the presence of a polymorphic VT suggests Torsade de Pointes. The patient could be congenital long QT syndrome, but likely the history will lead you to an anti-psychotic medication (such as resperidone) that led to long QT and then Torsades. Erythromycin, ketoconazole, itraconazole, and others may tip susceptible persons over the edge. Treatment for Torsade involves IV magnesium, overdrive pacing, and, if unstable, cardioversion.
18. Non-steroidal anti-inflammatory agents such as ibuprofen, naproxen, etc. are the number one drug contributing to peptic disease and GI bleeding.
19. Anti-cholinergic medications may produce delirium, especially in the elderly. Common medications like anti-histamines, anti-depressants and psych meds, and anti-parkinsonian meds are common causes. Classic anticholinergic signs are dry, warm, often pink / red skin and mucous membranes, dilated pupils and blurred vision, tachycardia and hypertension, delirium, and urinary retention / constipation.
20. **Diaphoresis.** Anticholinergic patients do not sweat (hot as a hare, red as a beet, dry as a bone). Sympathomimetic patients are agitated/confused, but they will be very diaphoretic. Clinical clues in history are important too!