

## Ms. Jiminez Case Study Questions

1. Ethylene glycol is a chemical found in products like antifreeze and coolant. It is a colorless, odorless, sweet-tasting chemical that is poisonous when ingested.
2. Ingestion of ethylene glycol can cause dysrhythmias and heart failure. Ethylene glycol toxicity is characterized by an osmolal gap and metabolic acidosis with an elevated anion gap. Nephrotoxicity after ethylene glycol ingestion typically occurs 24-72 hours after acute exposure.
3. Half-life is the time required for a quantity to reduce to half of its initial value. The half life of ethylene glycol is 3-8 hours in an untreated adult. Ethylene glycol is cleared from the body excretion in the urine.
4. A lethal dose of ethylene glycol is slightly greater than 1g/kg.
5. 4-Methylpyrazole is given to Ms. Jiminez because it works to inhibit the alcohol dehydrogenase from working and breaking down the antifreeze. This allows the antifreeze to get down to less toxic levels. The downside of this medication is that it is very expensive and can cost about 1,000 dollars per dose.
6. Ethanol is the next best treatment for ethylene glycol poisoning. Ethanol is administered orally and the patient requires close observation monitoring blood concentration of alcohol and blood sugar.
7. If Ms. Jiminez daughter had come home earlier she could have gotten Ms. Jiminez to the hospital earlier started treatment sooner. She also could have called poison control and started treatment on the way to the hospital.
8. Ms. Jiminez was given thiamine because ingestion of alcohol causes a depletion of vitamin B. Succinylcholine chloride, lorazepam is given so she can be intubated with no pain while protecting the airway. Levalbuterol is a bronchodilator which helps with expansion of the airway. Propofol and etomidate are used to sedate the patient.
9. Intravenous fluids with bicarbonate are administered to help combat the metabolic acidosis.
10. Metabolic acidosis. Yes her ABG is consistent with what is expected to see with ethylene glycol poisoning.
11. Ms. Jiminez was intubated and placed on a ventilator in order to protect her airway while she was in the critical stages. She was on 70% of Fio<sub>2</sub> with an oxygen saturation of 92%. She could not adequately oxygenate her body without being ventilated.
12. An assist-control of 14 means that the patient's breathing is fully controlled by the ventilator. There are 28 breaths being delivered each minute with a volume of 650. The percent of oxygen that the patient is receiving with each breath is 40%. A PEEP is referring to the pressure applied to the expiratory breathing.
13. The respiratory rate is set so high on the ventilator because we are trying to "blow off" the built up CO<sub>2</sub>.
14. The laboratory finding that reflects ethylene glycol poisoning is the anion gap of 29. Metabolic acidosis with an anion gap is one of the key signs to antifreeze poisoning.
15. A wood lamp emits ultraviolet light and there are properties in ethylene glycol which fluoresces under the light.

16. Ms. Jiminez's lab work shows that troponin and CK-MB is not elevated meaning no heart damage. The CK is also within normal limits meaning that there is no muscle damage.
17. The laboratory tests included an assessment of liver function because as the antifreeze metabolizes it will affect multiple organs including the liver.
18. A quinton catheter is used for hemodialysis and was placed to help filter out the toxicity from the bloodstream to prevent further damage to any organs.
19. Ineffective Coping, risk for self harm due to hopelessness, risk for depression

## Part 2

1. Acute renal failure is a sudden episode of kidney failure or kidney damage that happens within a few hours or a few days.
2. Ms. Jiminez is experiencing acute kidney failure because of its abrupt onset and severity.
3. Phase 1- onset phase is an initial insult to the kidney due to factors such as blood loss, dehydration, burns, diabetes, or infection, resulting in a decrease in renal blood flow and tissue oxygenation 25% of normal and urine output less than 0.5 mL/kg/hr. This phase lasts hours to days. Phase 2-oliguric-anuric is defined as a reduction in urine output less than 400 mL/day. Oliguria is manifested with- in 1 to 7 days of kidney injury. This phase typically lasts 10 to 14 days but can last months in some cases. Phase 3- Diuretic phase, in this phase, daily urine output is approximately 1 to 3 liters but can reach as high as 5 liters or more. The kidneys recover their ability to excrete waste but cannot concentrate the urine. Hypovolemia and hypotension may occur due to massive volume loss. Phase 4-Convalescent, which lasts days to weeks, the glomerular filtration rate reaches its nadir and urine output is at its lowest. The recovery phase lasts days, often beginning with post-acute tubular necrosis diuresis. Hypovolemia from excess urine output is a concern during this phase
4. Ms. Jiminez is in the onset phase.
5. Dialysis is the process of removing excess water, solutes, and toxins from the blood in people whose kidneys can no longer perform these functions naturally. Depending on the damage to the kidneys Ms. Jiminez may require a transplant or long term dialysis.
6. The results are worsening. The creatine is not being excreted properly which is leading to a buildup of excess. The BUN is extremely high showing that the kidneys are not functioning properly.
7. A potential dysrhythmia is the greatest concern.
8. Risk for decreased cardiac output, risk for depression, risk for ineffective coping, risk for imbalanced nutrition, risk for infection
9. A safety sitter is required because of Ms. Jiminez's suicide attempt and the fact that she doesn't not feel remorseful about her actions.
10. Two collaborative services that can be used are a counseling service as well as a home health nurse/transport for dialysis

11. Ms. Jiminez was already depressed before the MVC, but getting in the car accident worsened her issues. She probably felt helpless and she stated that she wishes that her suicide attempt would have worked.