

Case I

- UDT result comes back –ve for benzoylecgonine (cutoff 300ng/mL)
 - What does this mean?
- Could be that the donor is a non-user *or*
 - that cocaine hasn't been recently used (Threshold / Window of Detection Issue)
 - the lab wrote –ve instead of +ve (Lab/Clerical Error)
 - the wrong test was done (Sensitivity Problem)
- But regardless, the donor will not be accused of using cocaine

Case I cont.

- What if a patient is –ve for opiates but is being prescribed oxycodone?
 - Since oxycodone is an opiate (albeit a semisynthetic), this could be interpreted as evidence of non-compliance **BUT** all the same reasons apply for false –ve except this time, being negative is a bad thing!
- So, ***compliance testing*** is weighted against the donor! ☹️

Implications of Thresholds/Cutoffs

- Forensic testing usually relies on arbitrary cutoffs to determine positive/negative
 - A test sample that is 299ng/mL for cocaine differs *practically* from a sample that is 301ng/mL only in that the former is called –ve while the later is +ve (assuming a cutoff of 300ng/mL)
 - *Scientifically*, these results are the same (identical within confidence limits)
 - May only differ in the state of hydration of the donor
 - Beware peri-threshold results!

Case II

- Patient provides a UDT sample that is positive for THC
 - Pt admits to being a former cannabis user but quit a month before the test
 - A week later, a repeat test is –ve for THC
 - Supporting pts assertion that he has quit using marijuana as promised
 - Two weeks later, the sample is +ve again
 - Pt denies using cannabis. Did he relapse? Is he lying?

Case II cont.

- Is this an honesty problem as well as a drug problem? (what about dilution?)
 - Without considering the donor's state of hydration, this could easily be seen as a relapse
 - In fact, the –ve sample was collected at the end of the day and was highly dilute
 - The subsequent +ve sample was collected early in the morning, and was highly concentrated
 - When corrected for dilution, the peri-threshold results are entirely consistent with pts story of non-use

Case IIIa

- Pt on 10mg of methadone HCl in a q8hr dosing interval is tested for methadone parent
 - Routine UDT is –ve for methadone (pt previously had +ve methadone UDT results)
 - Urinary Creatinine / specific gravity suggests similar state of hydration so this is **NOT** a peri-threshold, concentration effect
 - pH of this sample is 7.8, which is unusually alkaline for this pt
 - Retesting sample for EDDP was +ve

Case IIIb

- Pt who is on methadone for chronic pain begins to miss appointments, has several unhealed skin abrasions and is unable to provide a requested UDT sample
 - When ‘encouraged’ to return the next day to leave a UDT specimen, the result is +ve methadone parent only (clinical suspicion is cocaine use)
 - Lab is called and request made for EDDP assay
 - Result is “Strongly +ve methadone; -ve EDDP”

Case IIIb

- Strongly +ve methadone result, in the absence of methadone metabolite (EDDP) is consistent with substituted, “spiked sample”
 - Question is “Why provide a substituted specimen?”
 - Either pt is not taking their prescribed methadone i.e. diversion or binging
 - Illicit drug use necessitates providing a ‘clean’ sample that must contain methadone to be consistent with prescribed medication
 - A second sample collected revealed BEG plus methadone/EDDP

Benzodiazepine Use

- Depending on which screen reagent is used, there may be variable cross reactivity with certain benzodiazepines, especially clonazepam (Klonopin®)
 - Drug test that is “**blind**” to a given analyte can be an advantage in certain situation
 - When a member of a class of drug is not readily detectible, this drug becomes ideal for use in tapering

- 84 yr woman with Dx “Idiopathic cerebellar degeneration with peripheral neuropathy”
 - On 112mg Hydromorphone per day

- Spouse indicates both have had 6 Vodka Martini's per day for past 42 years
 - New Dx “?Alcoholic Cerebellar Degeneration with peripheral neuropathy”
 - Got to see me d/t hydromorphone
 - Needed to see me because of EtOH

Summary

- Urine Drug Testing, when used in a patient-centered fashion, can be a very effective tool to reduce risk and optimize patient care
 - However caution must be exercised in resisting the urge to over interpret the results
 - At the present time, quantitative analysis may result in more questions than answers
 - At best, this is an emerging science that must mature to determine it's clinical utility but at worst, it may give the clinician a false sense of security, leading to inappropriate accusations and potential medicolegal harm