



## Quantitative Levels And Prescription Medications

We are frequently asked if quantitative levels of a drug detected in urine can be used to determine if a client is abusing a prescribed medication. The question is typically raised when the quantitative level from one drug test result is higher or lower than a previous result.

Drug test results from a urine specimen are not therapeutic results. Therefore, the quantitative level of a drug detected in urine cannot be used to determine if a client is taking more or less of the drug prescribed. Quantitative levels of a drug detected in urine will vary significantly depending upon the specimen's creatinine level at the time the specimen was collected. Creatinine, a byproduct of skeletal muscle contraction, is the laboratory industry standard for measuring the hydration of the bladder at the time a specimen is collected. The hydration of the bladder reflects how much fluid a client has consumed in a two to three-hour period preceding the specimen collection and directly impacts the extent to which a drug in the urine is concentrated.

The average human creatinine level ranges from approximately 100 mg/dL to approximately 160 mg/dL. Creatinine levels below 20 mg/dL are considered to be diluted, which renders any result invalid. As the Creatinine level increases, the drug becomes more concentrated and easier to quantify in nanograms per milliliter (ng/mL). As creatinine levels decrease, the drug becomes less concentrated and more difficult to quantify. For example, a urine specimen with a creatinine level of 100 mg/dL may reveal the quantitative level of a drug of 2,640 ng/mL. Had the creatinine level at the time of the specimen collection been 225 mg/dL, the quantitative level of the drug would have been much higher.

There are other factors that make using quantitative levels for therapeutic judgments dangerous. The rate at which an individual metabolizes any ingested substance and the elapsed time between when the client took the medication and provided the urine specimen will also have an impact on quantitative levels.

For many years, urine drug testing has been used to reveal only the presence of a drug in the donor's urine specimen. Testing for drugs in urine has never been used to determine if the donor is abusing a prescribed medication. Therapeutic analysis requires a "constant" specimen, like blood. Urine is not a "constant" specimen. Quantitative levels of a drug detected in urine are provided to show the relationship of the quantity of the drug detected against the industry "cutoff level." The "cutoff" level of a drug is the level at which most laboratories will consider a drug to be positive or negative. In workplace-related drug tests, a quantitative level below the cutoff level will be reported as a negative result. Cutoff levels are typically used by laboratories in workplace-related drug tests to prevent reporting false positives. In court-ordered drug testing, laboratories generally use the "lowest level of detection" (LOD) to determine a drug to be positive or negative. The lowest level of detection is the level at which a laboratory will consider a positive result to be legally defensible. Most LOD's are lower than workplace cutoff levels. The purpose of providing quantitative levels of a drug detected in urine is simply to affirm that the lab detected the drug in a measurable amount (ng/mL) and the measurable amount of the drug detected is quantified in nanograms per milliliter of urine.

Comparing quantitative levels of a drug in urine to determine if a client is taking medication as prescribed has no basis in science and can result in false allegations against the client.