



## Sample Adulteration

**QUESTION:** Is my patient simulating compliance?

### Ways to identify specimen adulteration or compliance simulation:

- Unusual parent drug and metabolite ratios** can indicate urine spiking or ingestion of high quantities of medication prior to testing to simulate compliance.

**Example 1:** High concentrations of Oxycodone with no Oxymorphone or Noroxycodone metabolites may indicate the patient spiked their urine with Oxycodone.

<b>Oxycodone</b>	<b>POSITIVE</b>	<b>50 ng/mL</b>	<b>&gt;12500 ng/mL</b>
Oxymorphone	Not Detected	50 ng/mL	
Noroxycodone	Not Detected	50 ng/mL	

**Example 2:** High concentrations of Buprenorphine and Naloxone along with very low levels of the Norbuprenorphine metabolite suggests that the patient has not been taking their Suboxone regularly. It is likely the patient took the medication just before their visit and likely indicates that the patient is noncompliant with prescribed therapy.

<b>Buprenorphine</b>	<b>POSITIVE</b>	<b>2 ng/mL</b>	<b>&gt;2500 ng/mL</b>
<b>Norbuprenorphine</b>	<b>POSITIVE</b>	<b>5 ng/mL</b>	<b>12 ng/mL</b>
<b>Naloxone</b>	<b>POSITIVE</b>	<b>5 ng/mL</b>	<b>6716 ng/mL</b>

- Creatinine** and **Specific Gravity** can be used to identify patients diluting or substituting their urine.
  - Creatinine normal range: 50 - 250 mg/dL; Specific Gravity normal range: 1.010-1.025
  - Creatinine <25 and/or SG <1.010 could indicate excessive water consumption or urine substitution with toilet water or a non-urine sample to hide the presence of illicit and non-prescribed drugs in the urine.
  - Creatinine is also used to correct drug concentrations to account for the hydration status of the patient.
- pH** values outside of this normal ranges suggests sample adulteration.
  - pH normal range is (5-8)
  - pH outside the normal range indicates that an adulterant was added to the urine, such as Drano or bleach.