TOXICOLOGY · CLIENT EDUCATION

Specimen Validity Interpretation

Confirming a urine specimen is suitable for testing — and what to do when it isn't

PRETORIAN LABS

Specimen Validity · v2.0 · 2026

WHY VALIDITY TESTING COMES FIRST

Drug results are only as trustworthy as the specimen that produced them. Before any result is released, Pretorian evaluates every urine specimen for creatinine, pH, and specific gravity — together answering one question: **is this normal, undiluted human urine?** A specimen that fails validity can produce false negatives, not because the patient is negative, but because the sample was too dilute or too altered to detect what was there.

THE THREE VALIDITY MARKERS

	CREATININE	pH	SPECIFIC GRAVITY
What it measures	A muscle waste product excreted by the kidneys at a steady rate. Reflects how concentrated the urine is.	The acidity or alkalinity of the specimen.	The total concentration of dissolved solids relative to water.
Acceptable range	**20 – 400** mg/dL	**4.7 – 7.8** pH units	**1.003 – 1.030** g/mL
Flagged when	**< 20**	**< 4** or **> 9**	**< 1.003** or **> 1.030**
What an abnormal result suggests	**2 – 20** — the patient is well hydrated, or drank heavily before collection. **Below 2** — not consistent with normal human urine. Combined with specific gravity below 1.003, this indicates a dilute specimen.	Values outside the physiologic range may indicate the addition of bleach, soap, or another adulterant to the specimen.	**Below 1.003** — commonly excessive hydration. Combined with creatinine below 2, indicates a dilute specimen. **Above 1.030** — the patient is likely dehydrated, though certain medical conditions can also raise it.

READING THE MARKERS TOGETHER

PATTERN	WHAT YOU SEE	WHAT IT USUALLY MEANS AND WHAT TO DO
VALID	All three markers within range	The specimen is suitable for testing. Interpret drug results normally.
DILUTE	Creatinine below 20 **and** specific gravity below 1.003	Most often excessive fluid intake before collection, incidental or deliberate. Drug concentrations are lowered across the board, so a negative result is less meaningful. Consider recollecting with fluid intake restricted beforehand.
SUBSTITUTED	Creatinine below 2 with specific gravity outside 1.003–1.030	Not consistent with normal human urine. Recollect, and consider observed collection per your program's policy.
ADULTERATED	pH below 4 or above 9	Consistent with something having been added to the specimen after voiding — bleach, soap, or a commercial adulterant. Recollect under observation.
CONCENTRATED	Specific gravity above 1.030	Usually dehydration rather than tampering, and it does not invalidate the specimen. Certain medical conditions raise specific gravity as well.

WORTH TELLING YOUR STAFF

A dilute specimen is not the same as a tampered specimen. Patients who hydrate heavily — for medical reasons, out of habit, or from nerves about the collection — routinely produce dilute urine. It is a reason to look more closely and possibly recollect, not a conclusion about intent. Validity findings describe the specimen, not the person, and should be read alongside clinical presentation, prescribed medications, and history.

Reference ranges reflect current Pretorian Labs practice and appear in the Validity section of every toxicology report. Questions about a specific specimen may be directed to your account manager. This laboratory is certified under CLIA as qualified to perform high complexity clinical laboratory testing.