



Patient ID G0000001	Patient Name VALIDATIONSOFT, TESTING			Birth Date 11/07/2009	Sex M	Age 16	Weight 55 kg
Order Number M329030126	Client Order Number	Ordering Physician UNKNOWN, PROVIDER			Previous Supersaturation Testing: Patient has 2 prior 24 hr duration tests and 6 prior random tests.		
Account Information CVALIDO Test Validation Outpatient				Collection Date* 04/29/2026 13:21			

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Patient Specific Diagnostic Comments

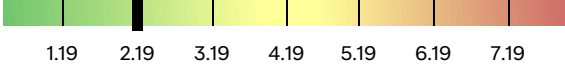
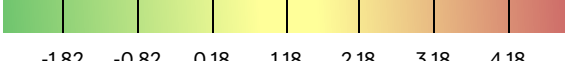
- D1** High urine calcium. Most common causes are idiopathic or genetic. More rare: hyperparathyroidism or other specific causes should be ruled out, especially if serum calcium is also high.
- D2** Consistent with high dietary oxalate intake.
- D3 D4** Consistent with high protein diet.
- D5** Consistent with decreased fluid intake or exposure to hot environments.
- D6** Consistent with diarrhea or other gastrointestinal losses.

Patient Specific Therapeutic Comments

- T1** High urine calcium. Lower sodium diet and or a thiazide diuretic might be helpful.
- T2** Lower sodium diet may help to reduce urine calcium.
- T3** At risk for uric acid stones. Changes in diet and medications to increase urine pH might be helpful.
- T4** Consider lower protein diet.
- T5** High urine uric acid. A lower protein diet and/or medications to reduce urine uric acid might reduce stone risk.
- T6** High urine oxalate. Reducing dietary oxalate and fat, and increasing dietary calcium might be helpful.
- T7** Urine overly concentrated. Increased fluid intake would reduce stone risk.

Overall Calculated Supersaturation Profile By Stone Type

MCR

Stone Type	Patient Supersaturation Delta Gibbs (DG)	Non-Stone Formers**		Deviation from Reference Mean	
		Mean	25% - 75% Range	<Less Stone Risk	More Stone Risk>
Calcium Oxalate	 3.29	1.89	1.42 - 2.13		
Calcium Phosphate (Brushite)	0.04	0.46	-0.41 - 1.32		
Calcium Phosphate (Hydroxyapatite)	2.16	4.19	3.33 - 5.31		
Uric Acid	 5.49 T3	1.18	-1.10 - 3.41		

** Based on normal value study of 48 adult men and 52 adult women

The DG is related to supersaturation. DG is negative for undersaturated solutions, zero for solutions at the solubility product, and positive for saturated solutions. Any value greater than the Reference Mean is considered a risk for the respective crystal type formation.

In general, a higher calculated SS means the risk for forming that type of stone is increased. A positive DG value indicates that the urine is supersaturated for that crystal type.

Performing Site Legend				
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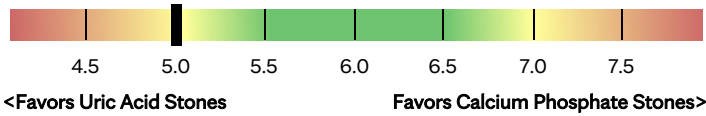


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Urine pH

5.0



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Creatinine

1875 mg/24 h

REFERENCE VALUE

Reference Values have not been established for patients who are less than 18 years of age

MCR

Normalized Values

"The following report utilizes literature-based reference ranges and clinical significance may vary for each individual patient."

MCR

Analyte Ratio	Result	Normal Range*
Creatinine/kg/24h	34	Pre-Pub 10-15 mg/kg/24 h Pubertal 18-24 mg/kg/24 h
Calcium/Creatinine	0.44	<0.25 mg/mg
Calcium/Citrate	0.35	<0.22 mg/mg
Calcium/kg/24h	15.00	<4 mg/kg/24 h
Oxalate/BSA	0.42	<0.5 mmol/1.73 m2
Oxalate/Creatinine	0.03	<0.03 mg/mg
*Literature-based normal values		

Analyte Ratio	Result	Normal Range*
Uric Acid/kg/24h	15.00	<9 mg/kg/24 h
Phosphorus/BSA	908.19	<1209 mg/1.73 m2/24 h
Magnesium/BSA	532.07	>88 mg/1.73 m2/24 h
Magnesium/kg/24h	15.82	>0.04 mg/kg/24 h
Citrate/BSA ¹	1421.92	>365 mg/1.73 m2/24 h
Sodium/Potassium ¹	1.77	<2.5 mg/mg
*Literature-based normal values		

Metabolic Risk Factors

MCR

Analyte	Result (24 h)*	Non-Stone Formers**		Relative Risk
		Median	25% -75% Range	
Calcium	825 mg 	234	159 - 291	
Oxalate ¹	0.68 mmol 	0.30	0.25 - 0.35	
Uric Acid	825 mg 	685	565 - 833	
Citrate ¹	2325 mg	637	492 - 911	
* Items are flagged based upon the reference range cut-offs				
** Based on normal value study of 48 adult men and 52 adult women				

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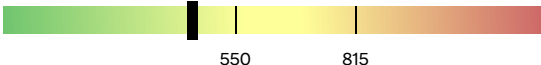
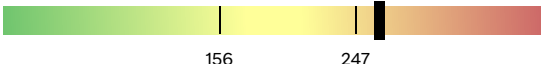
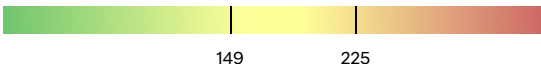
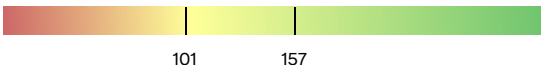
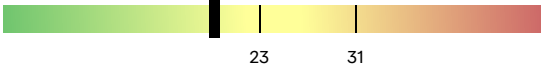
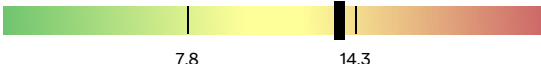
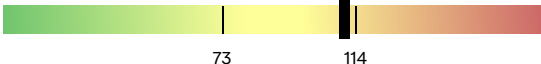
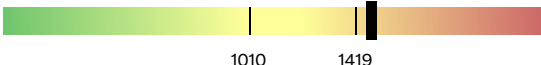
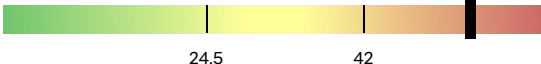


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Dietary Risk Factors

MCR

Analyte		Result (24 h)*	Non-Stone Formers**		Relative Risk
			Median	25% -75% Range	
Red = More Stone Risk					Green = Less Stone Risk
Fluid Intake	Volume	1500 mL	1307	1119 - 2037	
	Osmolality	450 mOsm/kg T7D5	693	550 - 815	
Salt Intake	Sodium	263 mmol T2	187	156 - 247	
	Chloride	375 mmol	189	149 - 225	
Fruits/Veggies	Potassium	149 mmol	72	54 - 88	
	Magnesium	870 mg	140	101 - 157	
Protein Intake	Sulfate ^①	19 mmol D6	27	23 - 31	
	Urea Nitrogen	13.7 g	11.5	7.8 - 14.3	
	PCR	111 g T4D3	97	73 - 114	
Other	Phosphorus	1485 mg	1164	1010 - 1419	
	Ammonium ^②	54 mmol D6	31	24.5 - 42	

* Items are flagged based upon the reference range cut-offs

** Based on normal value study of 48 adult men and 52 adult women

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Overall Calculated Supersaturation Profile By Stone Type

Historical Trends

	Calcium Oxalate	Brushite	Hydroxyapatite	Uric Acid	pH
Range*	1.42 - 2.13	-0.41 - 1.32	3.33 - 5.31	-1.10 - 3.41	5.7 - 6.3
Units	DG	DG	DG	DG	
04/29/2026**	3.29	0.04	2.16	5.49	5.0
04/29/2026	0.21	-1.73	3.36	-5.13	6.5
12/24/2025	-0.71	-3.71	3.10	-8.24	7.0

* Non-Stone Formers 25 - 75% Range for adult Male

** Denotes Current Report Data

Normalized Values

Historical Trends

	Creatinine/kg	Calcium	Calcium/kg	Oxalate/BSA	Oxalate	Uric Acid	Phosphorus	Magnesium	Magnesium/kg	Citrate
Range*	9-29	<0.25	<4	<0.5	<0.03	<0.60	<0.75	>0.05	>0.04	>0.25
Units	mg/kg/24 h	mg/mg	mg/kg/24 h	mmol/1.73 m2	mg/mg	mg/mg	mg/mg	mg/mg	mg/kg/24 h	mg/mg
04/29/2026**	34	0.44	15	0.42	0.03	0.44	0.79	0.46	15.82	1.24
04/29/2026	10	0.17	1.64	0.14	0.04	0.29	0.57	0.11	1.09	1.99
12/24/2025	6	0.16	0.96	0.08	0.04	0.36	0.16	0.16	0.96	2.76

* Reference Range, 95%

** Denotes Current Report Data

Metabolic Risk Factors

Historical Trends

	Calcium	Oxalate	Uric Acid	Citrate
Range*	159 - 291	0.25 - 0.35	565 - 833	492 - 911
Units	mg	mmol	mg	mg
04/29/2026**	825	0.68	825	2325
04/29/2026	90	0.23	150	1047
12/24/2025	53	0.13	119	914

* Non-Stone Formers 25 - 75% Range for adult Male

** Denotes Current Report Data

Dietary Risk Factors

Historical Trends

	Volume	Osmolality	Sodium	Chloride	Potassium	Magnesium	Sulfate	Urea Nitrogen	PCR	Phosphorus	Ammonium
Range*	1119 - 2037	550 - 815	156 - 247	149 - 225	54 - 88	101 - 157	23 - 31	7.8 - 14.3	73 - 114	1010 - 1419	24.5 - 42
Units	mL	mOsm/kg	mmol	mmol	mmol	mg	mmol	g	g	mg	mmol
04/29/2026**	1500	450	263	375	149	870	19	13.7	111	1485	54
04/29/2026	1500	320	225	225	47	60	20	10.7	92	300	24
12/24/2025	1325	310	166	166	5	53	12	6.6	66	53	24

* Non-Stone Formers 25 - 75% Range for adult Male

** Denotes Current Report Data

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Urine Supersaturation Laboratory Trends Over Time

- Higher urine calcium than previously.
- Reducing dietary sodium can reduce urinary calcium.
- Higher urine oxalate than previously, evaluate dietary oxalate and calcium intake.
- Evidence for diarrhea, may contribute to hyperoxaluria, lower pH, and/or hypocitraturia.
- Urine more concentrated than previously, increase fluid intake.
- Dietary sodium intake likely higher.
- Urinary pH lower than previously, increasing risk for uric acid stones.
- Considerable variation in creatinine excretion, suggesting variable completeness in 24 hr collection.

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General Comments - Pediatric Male Patients

Metabolic Risk Factors

Urine values that affect stone risk due to combinations of genetic and environmental influences.

Analyte	Non-Stone Formers 25 - 75% Range	Comment
Calcium	159 - 291	Hypercalciuria is a common risk for calcium oxalate and calcium phosphate stones. Most cases are idiopathic (familial/genetic) but hyperparathyroidism and other secondary causes need to be considered.
Oxalate	0.25 - 0.35	Hyperoxaluria is a common risk factor for calcium oxalate kidney stones. Mild hyperoxaluria is usually due to dietary imbalance between high oxalate intake and/or low calcium intake. Moderate increases (0.5 – 1.0 mM) are often due to enteric hyperoxaluria while values greater than 1.0 mM suggest the possibility of primary hyperoxaluria.
Uric Acid	565 - 833	Hyperuricosuria is usually due to a high protein/purine diet and is a risk factor for calcium oxalate stones. Low urinary pH is much more important risk factor for uric acid stones. Dietary intervention and or allopurinol can be considered.
Citrate	492 - 911	Low urinary citrate is a risk factor for calcium oxalate and calcium phosphate kidney stones. High-protein diet, lower gastrointestinal losses, and renal tubular acidosis are potential causes. Can treat with dietary intervention versus oral alkali such as potassium citrate.
pH	5.7 - 6.3	Low urine pH (<5.5) is a risk factor for uric acid stones while high urine pH (>6.5) is a risk factor for calcium phosphate stones.

Normalized Values

Normalizing urine values to urinary creatinine excretion can help to adjust for over or under collection of a 24 hr urine.

Analyte	Reference Range, 95%	Comment
Creatinine/kg/24h	10-15, 18-24 mg/kg/24 h	When high 24h urine possibly over collected; When low 24 h urine possibly under collected.
Calcium / Creatinine	<0.25 mg/mg	When high, treat as if 24 hour urinary calcium excretion were high.
Calcium / Citrate	<0.22 mg/mg	When high, treat as if urinary calcium were high and/or as if urinary citrate were low.
Calcium/kg/24h	<4 mg/kg/24 h	When high, treat as if 24 hour urinary calcium excretion were high.
Oxalate / Creatinine	<0.03 mg/mg	When high, treat as if 24 hour urinary oxalate excretion were high.
Oxalate / BSA	<0.5 mmol/1.73 m2	When high, treat as if 24 hour urinary oxalate excretion were high.
Uric acid/kg/24h	<9 mg/kg/24 h	When high, treat as if 24 hour urinary uric acid excretion were high.
Phosphorus / BSA	<1209 mg/1.73 m2/24 h	When high, treat as if 24 hour urinary phosphorus excretion were high.
Magnesium / BSA	>88 mg/1.73 m2/24 h	When low, treat as if 24 hour urinary magnesium excretion were low.
Magnesium/kg/24h	>0.04 mg/kg/24 h	When low, treat as if 24 hour urinary magnesium excretion were low.
Citrate / BSA	>365 mg/1.73 m2/24 h	When low, treat as if 24 hour urinary citrate excretion were low.
Sodium / Potassium	<2.5 mg/mg	When high, recommend lower dietary sodium intake and/or increased dietary potassium.

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Dietary Risk Factors

Urine values that reflect dietary intakes.

Analyte	Non-Stone Formers 25 - 75% Range	Comment
Volume	1119 - 2037	Low values are risk factor for all forms of kidney stones. Target at least 2 L per day although more may be necessary for larger individuals.
Osmolality	550 - 815	Urine osmolality is a better index of fluid intake and kidney stone risk than volume alone. Target urine osmolality less than 400.
Sodium	156 - 247	Urine sodium reflects dietary salt intake. Target less than 100 mEq per day.
Chloride	149 - 225	Urine chloride reflects dietary salt intake. Target less than 100 mEq per day.
Potassium	54 - 88	Very low values (<20 mEq) suggests gastrointestinal losses or chronic potassium deficiency. Higher values are typically seen with higher fruit and vegetable intake or use of potassium supplements.
Magnesium	101 - 157	Very low values (<60 mg) suggests gastrointestinal losses or malnutrition. High values suggest increased dietary magnesium intake via laxatives, magnesium supplements, or specific magnesium rich foods.
Sulfate	23 - 31	Sulfate is found in certain amino acids. Higher values suggest higher protein intake.
Urea Nitrogen	7.8 - 14.3	Urine urea nitrogen is derived from protein metabolism. Higher values suggest higher protein intake.
Protein Catabolic Rate (PCR)	73 - 114	This value is calculated from the urine urea nitrogen. Higher values suggest higher protein intake.
Phosphorus	1010 - 1419	Lower values suggest gastrointestinal losses or malnutrition. Higher values suggest high phosphorus intake. Does not directly alter kidney stone risk.

Calculated Supersaturation

The computer program EQUIL2 combines key urinary concentrations to estimate the urinary supersaturation for common stone types. Delta G stands for the thermodynamic term delta Gibbs. Positive Delta G values imply oversaturation and negative values undersaturation for that crystal type.

Analyte	Non-Stone Formers 25 - 75% Range	Comment
Calcium Oxalate	1.42 - 2.13	Most persons are somewhat oversaturated for calcium oxalate, but stone formers more so. Higher calcium and oxalate, lower volume and citrate all increase calcium oxalate SS.
Calcium Phosphate (Brushite)	-0.41 - 1.32	Although rare in stones, brushite is the most thermodynamically stable form of calcium phosphate. High urine pH (> 6.3) greatly increases brushite SS.
Calcium Phosphate (Hydroxyapatite)	3.33 - 5.31	The most common form of calcium phosphate in stones. High urine pH (> 6.3) greatly increases hydroxyapatite SS.
Uric Acid	-1.10 - 3.41	Low urine pH (<5.5) greatly increases uric acid SS.

Laboratory Notes

- This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.
- This test has been modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

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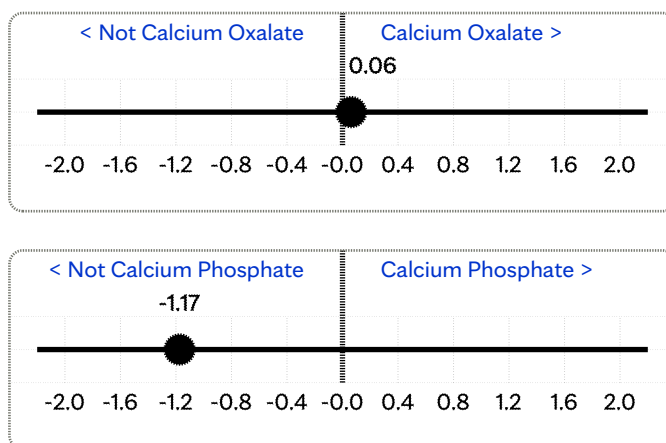
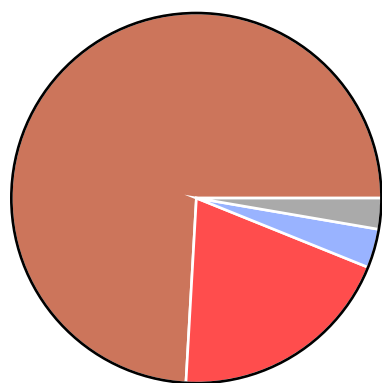
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Predicted Kidney Stone Type

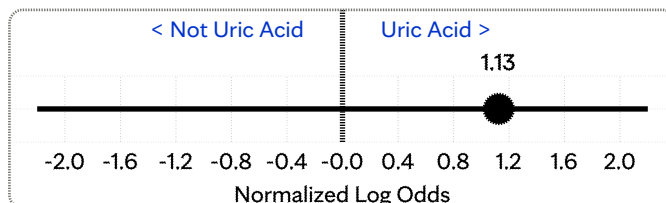
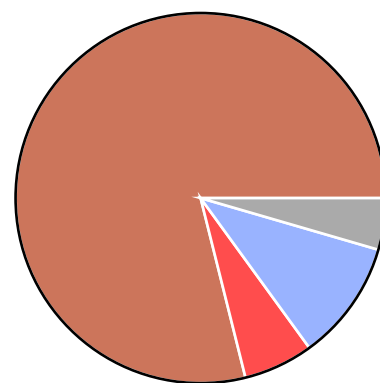
The following report combines age, sex, urine chemistry measurements, and supersaturation delta Gibbs values above to estimate the most likely composition of any kidney stone passed or removed in the past 90 days. The prediction is based on an algorithm trained with more than 10,000 paired urine and stone samples.

Others Your Age and Sex



Calcium Oxalate	0.74
Calcium Phosphate	0.20
Uric Acid	0.03
Other Stone Type	0.03

Your Likely Stone Type



Calcium Oxalate	0.79
Calcium Phosphate	0.06
Uric Acid	0.10
Other Stone Type	0.05

Understanding Your Results

Others Your Sex and Age

Shows how common each type of kidney stone is in people in the same age group and sex as yourself. For example, most kidney stone patients have a calcium oxalate stone. This is what your prediction would look like without any other information other than taking into account your sex and age group. Age groups are under 45 years old, 45-65, and over 65.

Log Odds Scores

Shows how strongly your urine results match the patterns seen with each type of stone. A higher score means a stronger match. These scores are used to help calculate your personal type of stone in your sex and age group.

Your Likely Stone Type

Takes into account your age, sex, and urine measurements. These numbers show how likely each stone type is for you.

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