Litholink™ 24 Hour Urine

Patient Results Report

PATIENT	DATE OF BIRTH	GENDER	PHYSICIAN
Patient, Cystine	**01/01/2000**	**M**	**Doctor, Sample**

Sample Doctor MD
Litholink Urology Clinic
150 West Spring Lake Dr
Itasca, IL 60143

Current Test Overview

SAMPLE ID	RESULTS TURNAROUND (IN DAYS)	PATIENT COLLECTION DATE	LAB RECEIPT DATE	DATE COMPLETED	SAMPLE BARCODE
S26773350	**1**	**05/09/2023**	**05/10/2023**	**05/10/2023**	S26773350
S26773292	**1**	**05/08/2023**	**05/10/2023**	**05/10/2023**	S26773292

No medical history was taken on this patient and will be reflected in the interpretive algorithms sections of the report. If you would like to update our records, we can rerun the interpretive paragraphs to reflect any changes made.

Sara Best, MD
Medical Director

Labcorp's computer generated comments are based upon the patient's most recent laboratory results without taking into account concurrent use of medication or dietary therapy. They are intended solely as a guide for the treating physician. Labcorp does not have a doctor-patient relationship with the individuals for whom tests are ordered, nor does it have access to a complete medical history, which is required for both a definitive diagnosis and treatment plan. Cys 24, Cys Capacity, Sulfate, and Citrate were developed and their performance characteristics determined by Labcorp. It has not been cleared or approved by the US Food and Drug Administration.

labcorp

Pawan K. Vohra, Ph.D.
Laboratory Director
CLIA# 14D0703742

Laboratory Corporation of America
150 Spring Lake Dr.
Itasca, Illinois 60143

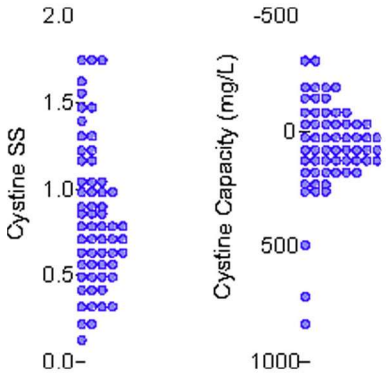
630 694 7400 Telephone
312 243 3297 Facsimile
litholink.labcorp.com

Patient Results Report

PATIENT	DATE OF BIRTH	GENDER	PHYSICIAN
Patient, Cystine	**01/01/2000**	**M**	**Doctor, Sample**

How To Use Your Cystine Report

Cystine excretion (Cys24) is in mg/day. We measure excretion on an aliquot of the original urine (at the ambient pH of the urine). Thereafter, the urine is alkalinized by the patient. We measure excretion on that aliquot as well. Here, we report the higher of the two (cystine dissolves at a high pH), which is often the alkalinized sample. Normal is below 75 mg/d; most cystine stone formers are above 300.



Actual Urine Cys SS and Capacity

Cystine supersaturation (SS Cys). We incubate the ambient pH urine for 48 hours with crystals of cystine. The resulting saturation concentration is all the cystine that the urine can dissolve. Dividing the saturation concentration of cystine into the cystine concentration of the original urine gives us SS Cys. To prevent cystine stone formation SS Cys should be kept well below 1.0, as transient peaks throughout the day may exceed saturation. The optimal value of SS Cys to prevent stone formation is not known, but we recommend a goal of SS Cys below 0.6.

If patients are not on sulfhydryl drugs (tiopronin, penicillamine, captopril) Cys24 and SS Cys values are reliable, and a guide to treatment. If they are on such drugs, you must rely mainly on **Capacity.**

Capacity is unique to the Litholink 24-Hour Urine Cystine Panel (patented) that is not affected by sulfhydryl drugs, and yet gives a precise index of supersaturation. We incubate the ambient pH urine with a measured amount of solid phase cystine for 48 hrs at 37°C. Thereafter, we separate the remaining solid cystine from the urine, discard the urine, and take the cystine up into an alkaline buffer, to measure how much is left. A supersaturated urine will lose cystine into the solid cystine mass, giving a negative (-) value, an undersaturated urine will take up cystine, giving a positive (+) value (See Figure).

The goal of treatment is to reduce SS Cys below 0.6, if SS is usable, or increase capacity to a positive (+) value of > 150 mg/L. Usual treatments are **high fluids** to achieve a urine volume >3.5 liter daily, and **increased urine pH** to 7 - 7.5 using potassium alkali. **Additional treatments** are reduced sodium and protein intakes, which lower urine cystine excretion. We show 24 hour urine sodium excretion **(Na24)** and both urine urea nitrogen **(UUN)** and protein catabolic rate **(PCR)** as your guide.

Because high urine pH foments **calcium phosphate stones**, we measure calcium, citrate, and phosphorus excretion, and calculate an estimate of calcium phosphate supersaturation **(BrSS)** that does not require a full Litholink 24-Hour Urine Kidney Stone Prevention panel, but will suffice as a useful approximation.

The goal of treatment is to maintain a high enough urine volume and low enough urine calcium that the BrSS value is below 1.5. Usually urine calcium is normal in cystinuric patients, but some may have idiopathic hypercalciuria, and require thiazide as an additional treatment.

labcorp

Pawan K. Vohra, Ph.D.
Laboratory Director
CLIA# 14D0703742

Laboratory Corporation of America
150 Spring Lake Dr.
Itasca, Illinois 60143

630 694 7400 Telephone
312 243 3297 Facsimile
litholink.labcorp.com

Patient Results Report

PATIENT	DATE OF BIRTH	GENDER	PHYSICIAN
Patient, Cystine	**01/01/2000**	**M**	**Doctor, Sample**

Cystine Chemistry Data

The analytic performance characteristics of the cystine assay have been determined by Labcorp. This test has not been approved or cleared by the FDA.

DATE	SAMPLE ID	Vol 24	Cys 24	SS Cys	Capacity	pH	Na 24	UUN 24	PCR
05/09/23	S26773350	0.94	695	2.28	-435	5.572	95	7.77	0.8
05/08/23	S26773292	1.02	610	1.85	-293	5.687	91	6.10	0.6

ABBR.	ANALYTE	COMMENTS
Vol 24	Urine Volume	*1/d; 0.5-4 L: In cystine stone formers should be >2.5.*
Cys 24	Cystine Excretion	*mg/d; < 75; sulfhydryl drugs (tiopronin, penicillamine, and captopril) may interfere.*
SS Cys	Cystine Supersaturation	*< 0.1; goal of therapy is < 0.6; sulfhydryl drugs may interfere; (J Urol 164:1481-1485, 2000).*
Capacity	Cystine Capacity	*cystine that the patient's urine can dissolve; a positive value means the urine is undersaturated; a negative value means the urine is supersaturated;* ***sulfhydryl drugs do not interfere****; goal of therapy > 150 mg/L (J Urol 166:688-693, 2001).*
pH	24 Hour urine pH	*5.8-6.2; K or Na citrate 25-30 mEq BID; to keep pH above 7.0 in cystinuria patients.*
Na 24	Urine Sodium	*mmol/d; 50-150; USDA recommended ideal 100mmol/day.*
UUN 24	Urine Urea Nitrogen	*g/d; 6-14; This measures urea production from diet protein.*
PCR	Protein Catabolic Rate	*g/kg/d; 0.8-1.4; this measures protein intake per kg body weight.*

labcorp

Pawan K. Vohra, Ph.D.
Laboratory Director
CLIA# 14D0703742

Laboratory Corporation of America
150 Spring Lake Dr.
Itasca, Illinois 60143

630 694 7400 Telephone
312 243 3297 Facsimile
litholink.labcorp.com

Patient Results Report

PATIENT	DATE OF BIRTH	GENDER	PHYSICIAN
Patient, Cystine	**01/01/2000**	**M**	**Doctor, Sample**

Cystine Urine Chemistry Data

The analytic performance characteristics of the cystine assay have been determined by Labcorp. This test has not been approved or cleared by the FDA.

DATE	SAMPLE ID	Cr 24	Ca 24	P 24	Cit 24	SS Br	Ca24/Kg	Cr 24/Kg	WEIGHT
05/09/23	S26773350	749	140	0.524	47	1.57	1.7	8.8	84.8
05/08/23	S26773292	762	132	0.467	122	0.87	1.6	9.0	84.8

ABBR.	ANALYTE	COMMENTS
Cr 24	Urine Creatinine	*mg/d; varies with body weight, check for day to day consistency of urine collection.*
Cr 24 / Kg	Creatinine/Kg	*mg/kg/d; male 11.9 - 24.4, female 8.7 - 20.3; low in obesity, incomplete collections; high when opposite.*
Ca 24	Urine Calcium	*mg/d; male <250, female<200; Idiopathic hypercalciuria, consider Naqua 2 mg bid or chlorthalidone 25 mg qam, urine Na <100.*
P 24	Urine Phosphorus	*g/d; 0.6 - 1.2; Low in bowel disease, malnutrition, high with large food intake.*
Cit 24	Urine Citrate	*mg/d: male >450, female>550: when low, consider K citrate 25 bid; if from RTA (urine pH >6.5) also use K citrate.*
SS Br	Estimated Brushite Supersaturation	*0.5 - 1; correlates with SS CaP; Increases with alkali therapy; (Eur Urol 10:191-195, 1984).*
Ca 24/Kg	Calcium/Kg	*mg/kg/d; <4.00; when high treated as if mg/d were high.*
Wt/Kg	Body Weight in Kg	*Obtained from treating physician or patient.*

labcorp

Pawan K. Vohra, Ph.D.
Laboratory Director
CLIA# 14D0703742

Laboratory Corporation of America
150 Spring Lake Dr.
Itasca, Illinois 60143

630 694 7400 Telephone
312 243 3297 Facsimile
litholink.labcorp.com

Patient Results Report

PATIENT	DATE OF BIRTH	GENDER	PHYSICIAN
Patient, Cystine	**01/01/2000**	**M**	**Doctor, Sample**

Stone Risk Factors / Cystine Screening

ABBR.	ANALYTE	REFERENCE RANGE	COMMENTS
Vol 24	Urine Volume	0.5 - 4	*L/d; Raise vol to at least 2L .*
SS CaOx	Supersaturation CaOx	6 - 10	*Raise urine vol and cit, lower ox and ca.*
Ca 24	Urine Calcium	male <250, female <200	*idiopathic hypercalciuria, consider hydrochlorothiazide 25 mg bid or chlorthalidone 12.5 - 25 mg qam, urine Na <100.*
Ox 24	Urine Oxalate	20 - 40	*usually dietary; if enteric, consider cholestyramine, oral calcium 1-2 gm with meals; if >80, may be primary hyperoxauria.*
Cit 24	Urine Citrate	male >450, female >550	*consider K citrate 20 - 30 mEq BID; if from RTA (urine pH > 6.5) also use K citrate.*
SS CaP	Supersaturation CaP	0.5 - 2	*Urine usually pH > 6.5, idiopathic hypercalciuria common.*
pH	24 Hour Urine pH	5.8 - 6.2	*<5.8 consider K or Na citrate 25-30 mEq BID; 6.5, RTA if citrate is low; >8, urea splitting infection.*
SS UA	Supersaturation Uric Acid	0 - 1	*Urine pH <6, creates UA stones. Treated with alkali.*
UA 24	Urine Uric Acid	male <0.800, female < 0.750;	*g/d; dietary; if stones are severe and low protein diet fails try allopurinol 200 mg/d.*

*** Cystine Screening: positive result may be seen in patients with homozygous cystinuria and cystine stone disease, some individuals heterozygous for cystinuria without cystine stone disease, or in patients taking medications such as captopril or penicillamine.*

Dietary Factors

ABBR.	ANALYTE	REFERENCE RANGE	COMMENTS
Na 24	Urine Sodium	mmol/d; 50 - 150	*When high raises urine Ca, and K loss from thiazide; ideal is <100.*
K 24	Urine Potassium	mmol /d; 20 - 100	*<20, consider bowel disease, diuretics, laxatives.*
Mg 24	Urine Magnesium	mg/d; 30 - 120	*Low with poor nutrition, some laxatives, malabsorption syndrome.*
P 24	Urine Phosphorus	g/d; 0.6 - 1.2	*Low in bowel disease, malnutrition, high with large food intake.*
Nh4 24	Urine Ammonium	mmol/d; 15 - 60	*High + pH>7, urea splitting infection; low + pH <5.5, renal disease, UA stones, Gout.*
Cl 24	Urine Chloride	mmol/d; 70 - 250	*Varies with sodium and potassium intake.*
Sul 24	Urine Sulfate	meq/d; 20 - 80	*When high shows high protein diet.*
UUN 24	Urine Urea Nitrogen	g/d; 6 - 14	*This measures urea production from diet protein.*
PCR	Protein Catabolic Rate	g/kg/d; 0.8 - 1.4	*This measure protein intake per kg body weight.*

Normalized Urine Values

ABBR.	ANALYTE	COMMENTS
Weight	Body Weight in Kg	*Obtained from treating physician or patient.*
Cr 24	Urine Creatinine	*mg/d; varies with body weight; check for day to day consistency of urine collection.*
Cr 24/Kg	Creatinine/Kg	*mg/kg/d; male 11.9 - 24.4, female 8.7 - 20.3; low in obesity or incomplete urine collection, high in people with large muscle mass or over-collection of urine.*
Ca 24/Kg	Calcium/Kg	*mg/kg/d; <4.00; when high, treated as if Ca 24 mg/d were high.*
Ca 24/Cr 24	Calcium/Creatinine	*mg/g; male 34-196, female 51-262; when high, treated as if Ca 24 mg/d were high.*

labcorp

Pawan K. Vohra, Ph.D.
Laboratory Director
CLIA# 14D0703742

Laboratory Corporation of America
150 Spring Lake Dr.
Itasca, Illinois 60143

630 694 7400 Telephone
312 243 3297 Facsimile
litholink.labcorp.com