Litholink Laboratory Reporting System ™

Patient Results Report

PATIENT	DATE OF BIRTH	PHYSICIAN
Patient, Sample	**09/11/1925**	**Sample, Physician T.**

Physician T. Sample MD
Sample Hospital
Department of Nephrology
2650 Sample Street
Evanston, IL 60201

Current Test Overview

SAMPLE ID	RESULTS TURNAROUND (IN DAYS)	PATIENT COLLECTION DATE	LAB RECEIPT DATE	TEST COMPLETION DATE	SAMPLE BARCODE
S119066	**3**	**01/31/2005**	**02/01/2005**	**02/04/2005**	

Litholink'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. Litholink 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 Litholink Corporation. It has not been cleared or approved by the US Food and Drug Administration.

Litholink
The Kidney Stone Prevention Resource™

Fredric L. Coe, MD
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CLIA# 14D0897314

Litholink Corporation
2250 West Campbell Park Drive
Chicago, Illinois 60612

800 338 4333 Telephone
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www.litholink.com

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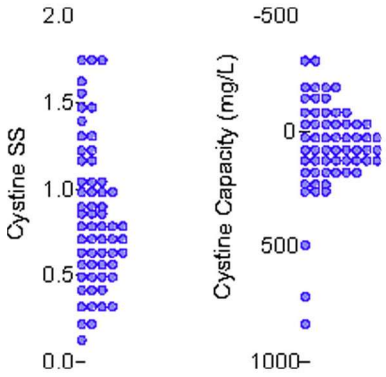
How To Use Your Cystine Report

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 a unique Litholink test (patent pending) 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 panel of data, 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.

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Cystine Chemistry Data

Values larger, bolder and more towards red indicate increasing risk for kidney stone formation. The analytic performance characteristics of the cystine assay have been determined by Litholink Corporation. 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
01/31/05	S119066	3.12	791	0.96	28	6.671	256	9.57	0.8

ABBR.	ANALYTE	TREATMENT RECOMMENDATION
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.*

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Cystine Urine Chemistry Data

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DATE	SAMPLE ID	Cr 24	Ca 24	P 24	Cit 24	SS Br	Ca24/Kg	Cr 24/Kg	WEIGHT
01/31/05	S119066	**1345**	**164**	**0.978**	**365**	**0.65**	**1.8**	**14.8**	90.9

ABBR.	ANALYTE	TREATMENT RECOMMENDATION
Cr 24	Urine Creatinine	*mg/d; varies with body weight, check for day to day consistency of urine collection.*
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 g/d; 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.*
Br SS	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.*
Cr 24 / Kg	Creatinine/Kg	*mg/kg; male 18 - 24, female 15 - 20; low in obesity, incomplete collections; high with opposite.*

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Clinical Report

The clinical information shown below was obtained directly from your patient during our telephone interview, and, where possible, from medical records forwarded from your office.

Stone Morbitity

	BEFORE TREATMENT	AFTER TREATMENT
First Stone Date:	01/01/1945	N/A
Total Stones:	100	0
ER Visits:	20	0
Hospital Visits:	20	0
Infections:	10	0
Cystoscopies:	45	0
Lithotripsies:	10	0
Operations:	0	0
Treatment Began:	N/A	02/15/2005

Family History

Father had stones:	No
Mother had stones:	No
Number of siblings:	6
Siblings with stones:	
Number of children:	2
Children with stones:	

Contributing Factors

Hot or dry environment:	No
Limited access to restroom:	No
Long term immobilization:	No
Long term steroid therapy:	No
Kidney removed:	Yes

Surgical History

	EVENT DATE

Dietary History

	START	STOP

Medication History

DRUG (DOSE/DAY)	START	STOP
Captopril (25 mg/qd)	01/01/2001	

Related Diseases

	DIAGNOSED
Gout	02/14/2005
Cystinuria	02/14/2005

= Before Treatment = After Treatment

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