

Cystinosis Research Network

*Dedicated to a Cure.
Committed to Our Community.*



**Cystinosis Information for
Medical Professionals**

Our Mission

The Cystinosis Research Network (CRN) is a volunteer, non-profit organization dedicated to advocating and providing financial support for research, providing family assistance and educating the public and medical communities about cystinosis.

Our Vision

The Cystinosis Research Network's (CRN) vision is the discovery of improved treatments and ultimately a cure for cystinosis.

The Cystinosis Research Network funds research and programs primarily through donations from the public, grassroots fundraising events and grants.

Cystinosis
Research Network

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What is Cystinosis?

Cystinosis is an autosomal recessive disorder with an estimated incidence of 1 case per 100,000 to 200,000 live births. The gene for cystinosis, CTNS, resides on chromosome 17p13 and has been isolated and sequenced.

Cystinosis is a lysosomal storage disease that results from the impaired transport of cystine from the lysosome into the cytoplasm. This eventually results in cystine crystal formation in a wide variety of cells.

Clinical Characteristics

There are three types of cystinosis – **nephropathic, intermediate,** and **ocular.**

The initial manifestations of **nephropathic cystinosis**, which accounts for perhaps 95 percent of cases, generally appear several months after birth and include the following:

- **Renal Fanconi Syndrome** (polyuria, polydipsia, electrolyte imbalance, dehydration, and rickets).
- **Growth Failure**
- **Photophobia** (resulting from cystine crystal formation in the cornea) occurs in later childhood and generalized renal failure occurs at approximately 10 years of age.

Intermediate cystinosis, also called “late-onset” or “juvenile” cystinosis, has the same features as the nephropathic form, but with a markedly slower rate of progression.

Ocular, or non-nephropathic cystinosis is characterized by the ocular findings typical of nephropathic cystinosis. However, all systemic manifestations are lacking; kidney disease does not occur.

Diagnosis

Two primary means are used to diagnosis cystinosis. They are:

1. Measurement of leukocyte cystine content
2. Identification of crystals on slit-lamp examination of the corneas

Treatment

Successful treatment of nephropathic cystinosis requires early diagnosis. If the condition is not identified in infancy, chronic renal failure may develop at an early age with the attendant need for dialysis and transplantation. The therapeutic needs of an affected patient depend on the stage of the disease and fall into two categories, supportive and specific therapies.

Specific Therapy with Cysteamine

- **Cysteamine:** an aminothiols which results in long-term depletion of lysosomal cystine; institution of such therapy early in life retards renal glomerular deterioration and improves linear growth
- **Dosage:** start at a daily dose of 10 mg of free base per kilogram of body weight per day, given in divided doses every six hours and increased weekly by 10 mg per kilogram per day until a target dose of 60 to 90 mg per kilogram per day is reached; target leukocyte cystine content is less than 1.0 nmol of half-cystine per milligram of protein
- **Corneal Crystals:** do not dissolve with oral cysteamine therapy, but do respond to administration of cysteamine eyedrops; ocular symptoms regress within weeks and the corneas clear within months to years. Cysteamine drops have not yet been approved by the FDA.

Supportive Therapies

- **Fanconi Syndrome:** unrestricted intake of water and salt, supplementation with sodium bicarbonate or sodium-potassium citrate, calcium, sodium phosphate, 1.25-dihydroxycholesterol, and carnitine
- **Growth Failure:** adequate nutrition and in some cases gastrostomy tubes to aid in nutrition and drug administration, growth hormone
- **Hypothyroidism:** levothyroxine therapy
- **Hypogonadism:** testosterone replacement (for adult males who did not receive cysteamine as children)
- **Renal Failure:** peritoneal dialysis or hemodialysis until a renal allograft can be transplanted, or pre-emptive transplantation without antecedent dialysis



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