

Positive Result:

Blood Spot Screen Result Notification



Elevated C26:0-lysophosphatidylcholine (C26:0-LPC)

Next Steps

This week, you should take the following recommended actions:

- **Consult** with a center with expertise in the diagnosis and treatment of X-ALD. Contact information for available specialist centers can be found on the resource list provided.
- **Contact** family to notify them of the newborn screening result and assess symptoms as guided by the consultant.
- **Arrange** referral to one of the specialist centers for further diagnostic work-up.

If you have questions about the newborn screening result or your next steps, an on-call Newborn Screening Program genetic counselor is available at (651) 201-3548.

Review with Family

Discuss this result with the family as MDH has **not** notified them. Share the follow-up plan with them. Educate family about signs, symptoms, and when to contact you with concerns.

Differential Diagnosis

Elevated C26:0-LPC is primarily associated with:

- X-linked adrenoleukodystrophy (X-ALD) — Incidence of 1 in 21,000 males
- X-ALD carrier — Incidence of 1 in 14,000 females

Other disorders to consider:

- Other peroxisomal disorders (e.g., Zellweger spectrum disorders)

Clinical Summary

X-ALD is a peroxisomal disorder, which is inherited on the X chromosome. It is caused by a deficiency of adrenoleukodystrophy protein (ALDP), which transports very long chain fatty acids (VLCFAs) into peroxisomes. As a result of this deficiency, VLCFAs accumulate, which leads to destruction of the myelin sheath and insufficient adrenal function.

There is wide variability in severity and age of onset, even among family members.

Males:

There are three types of X-ALD and newborn screening cannot distinguish between them. The three types (in order of severity), and symptoms if untreated, include:

- Childhood cerebral—learning and behavior problems begin before age 10 and progress to multiple neurologic issues leading to total disability and death within a few years of symptom onset.
- Adrenomyeloneuropathy (AMN)—adults develop progressive stiffness and weakness in the legs, bladder and bowel problems, and adrenocortical insufficiency.
- Addison disease only—adrenocortical insufficiency with many developing features of AMN by mid-adult years.

Long-term monitoring by specialty centers will allow for appropriate timing of interventions, including adrenal hormone replacement and hematopoietic stem cell transplantation.

Carrier Females:

Many carrier females will develop symptoms of myelopathy and peripheral neuropathy as adults. Cerebral or adrenal disease is very rare.