Alström Syndrome
A guide for patients

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Contents

- Why is it called Alström Syndrome?
- How common is it?
- What causes Alström Syndrome?

What are the features of Alström Syndrome?

Diagnosing Alström Syndrome

Managing Alström Syndrome

- Is there a cure for Alström Syndrome?
- What are the chances of having another affected child?

Further Information

Contact List

This booklet has been produced by the Euro-WABB project. The Euro-WABB project initiated in 2011 following an international workshop organised by Association Syndrome de Wolfram. The project aims to support efficient diagnosis, treatment, and research for Wolfram, Alström, Bardet-Biedl (WABB) and other rare syndromes. The purpose of this leaflet is to provide information and
Alström Syndrome is a genetic disorder that can cause a set of conditions including vision problems ("Retinal Degeneration"), hearing loss, obesity, heart problems ("Cardiomyopathy") and diabetes (due to insulin resistance) as well as other possible features. Please see following page for further details.

**Why is it called Alström Syndrome?**

A syndrome is the name given to a condition where features occur in a consistent pattern, and where the cause is not understood. Alström Syndrome is named after a Dr Carl-Henry Alström, who in Sweden in 1959 described several members of a family with similar features including retinal degeneration, obesity, sensorineural hearing loss, and diabetes. Since then over 200 patients have been described in the world medical literature.

**How common is it?**

Alström Syndrome is extremely rare. It affects less than 1 in 500,000 people. A specialist physician may only see one affected child in a professional lifetime.

**What causes Alström Syndrome?**

Alström Syndrome is an inherited genetic condition. It is caused by a gene "mutation" which means that part of a person’s DNA has been altered. The gene that is affected in Alström Syndrome is called "ALMS1" and the mutation in this gene affects how a protein used in human body cells works. This affected protein is used in the outer "cilia" structure of human body cells which means that Alström Syndrome can sometimes be classed as one of a collection of genetic disorders called "ciliopathies". At the moment, doctors do not know everything about the affected protein but it is known that the disruption is what causes the various features seen in Alström Syndrome.

So far, more than 80 different mutations of the ALMS1 gene have been identified in patients.
Alström Syndrome is vary varied and presents differently for different people. The following are some of the most common features:

Vision Problems - “Retinal Degeneration”

Vision problems can be part of this condition and “Retinal Degeneration” is often the first sign of Alström Syndrome. This is when the retina at the back of the eye breaks down over time. Affected children often have retinal dystrophy which means abnormalities of the rods and cones at the back of the eye. Retinal dystrophy can cause nystagmus or “wobbly eyes” as well as extreme photophobia (sensitivity to light). Patients with retinal degeneration may eventually become blind.

Hearing Loss

Hearing loss or deafness usually means difficulty in hearing in a crowded room, and difficulty hearing high pitched sounds. Hearing loss usually occurs in Alström Syndrome during childhood and before the age of 10.

Obesity

Some children with Alström Syndrome can develop early-onset obesity. This is part of the condition and not a result of poor diet. Obesity can lead to complications later in life such as fatty liver disease later on in childhood.

Cardiomyopathy

For some people with Alström Syndrome dilated cardiomyopathy can occur during childhood. This is when the heart muscle is enlarged and does not work as efficiently as it should so blood does not reach all areas of the body easily. Over time the heart tissue may become scarred and this can make the muscle inflexible and restricted. Cardiomyopathy often recovers during childhood but may recur during adolescence.
Renal dysfunction including weakness in bladder function and chronic kidney disease may develop.

**Insulin Resistance**

Alström Syndrome can also involve resistance to insulin and Type 2 Diabetes Mellitus. This is when the body cannot convert glucose (sugar) to energy. Glucose therefore stays in the blood or is passed out in urine and is not used up by the body. Symptoms of Diabetes Mellitus include thirst and frequent passing of urine as well as weight loss.

There are a number of other issues that can sometimes be related to Alström Syndrome including bowel problems, liver problems, hypothyroidism and respiratory problems.

### Diagnosing Alström Syndrome

As Alström Syndrome is so rare not all doctors will be aware of it and some of the features of this complex disorder may be misdiagnosed by health professionals. Sometimes, Cardiomyopathy can be misdiagnosed as a virus or obesity might be considered to be caused by diet rather than by an underlying syndrome. Early diagnosis and management of conditions leads to better health outcomes for patients and improved quality of life. It is important that you show this information sheet to your doctors so they know what information you have. Also for further clinical information for you or your doctor, Euro-WABB have published a clinical management guideline for Alström Syndrome which is available on the Euro-WABB website ([www.euro-wabb.org](http://www.euro-wabb.org)).

Most of the features of Alström Syndrome will exhibit during childhood. If retinal dystrophy and obesity are both present during childhood, before the age of 15 then an individual is likely to have Alström Syndrome. Your doctor can take a blood sample that can be genetically tested to confirm the diagnosis of Alström Syndrome.
The current treatment for Alström Syndrome involves treating the various presenting symptoms and effects on the body separately:

- Photophobia can be soothed by wearing dark glasses both inside and outside. This is to protect retinas from bright light both. Unfortunately there is no treatment to cure photophobia or nystagmus.
- Hearing loss can be treated with the use of a hearing aid.
- Obesity can be treated with a lower calorie diet and regular exercise.
- Type 2 Diabetes can be treated with Metformin.
- Diabetes Mellitus can also be controlled with insulin injections if necessary. These supplement the insulin in the body and allow glucose to be converted to energy for the cells to use.
- Treatment is available if individuals go on to develop Chronic Kidney Disease.

Once a child has been diagnosed with Alström Syndrome regular health appointments and assessments will be required. These assessments are to manage the presenting symptoms of the syndrome and also to test for the related symptoms that we know about so that they can be diagnosed and managed as early as possible.

Yearly ophthalmology tests for eyesight and “Audiometry” tests for hearing are recommended for Alström patients to track the progress of retinal degeneration and hearing loss. For obesity and diabetes, diet and exercise advice will be given along with HbA1c blood tests to look at average blood glucose levels over a few weeks and other treatments to manage any complications of diabetes. Regular electrocardiograms and echocardiograms of the heart will look for cardiomyopathy before any symptoms present. Regular testing for any issues with the liver, kidneys and digestive system are also recommended.
The chances of parents having another child affected by Alström Syndrome are about 25%. Alström Syndrome is inherited as an autosomal recessive condition; this means that both parents carry one abnormal copy of the Alström gene, and one normal copy. For a child to be affected, they must inherit 2 abnormal copies, one from each parent. It is possible to test if an unborn child is affected during pregnancy.

Further Information

For further information on Alström Syndrome please see:

  This article on Gene reviews provides a good review of the condition.
- **Alström Syndrome UK (ASUK)** ([www.alstrom.org.uk](http://www.alstrom.org.uk))
  ASUK provide a great deal of information about this condition to patients and their families. The charity also provides support for families and updates on latest research and events.
- **Alström Syndrome International (ASI)** ([www.alstrom.org](http://www.alstrom.org))
  ASI is an international charity providing links to family support and information as well as research into the syndrome.
- **Alström Europe (ASEU)** ([www.alstrom.org.uk/alstrom-europe](http://www.alstrom.org.uk/alstrom-europe))
  ASEU comprises clinicians and researchers collaborating on research projects into Alström Syndrome.
- **Orphanet** ([www.orpha.net](http://www.orpha.net))
  Orphanet is an online database of rare diseases and related services provided through Europe. It contains information on over 5 000 conditions and lists specialised clinics, diagnostic tests, patient and organizations, research projects and trials.
- **Euro-WABB** ([www.euro-wabb.org](http://www.euro-wabb.org))
  The EURO-WABB Project is a collaboration of doctors, scientists and patient support groups from all over Europe. This website provides information on Wolfram Syndrome and other rare genetic forms of diabetes.
There are a number of patient support groups and clinicians around Europe who are interested in Alström Syndrome. This contact sheet provides information on groups and clinicians that have been involved in the Euro-WABB project.

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<th>Country</th>
<th>Contact</th>
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<td>France</td>
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For all other countries or for information on genetic diagnostic laboratories please contact euro-wabb@bch.nhs.uk