



Amyloidosis
Ireland

 **AMYLOIDOSIS
ALLIANCE**
THE VOICE OF PATIENTS

 **Amyloidosis
UK**

YOUR HEALTH AND ATTRv AMYLOIDOSIS

the 
BRIDGE[®]
hATTR amyloidosis

DEVELOPED AND FUNDED BY ALNYLAM PHARMACEUTICALS

If you have just found out ATTRv amyloidosis – also commonly known as hereditary ATTR (hATTR) amyloidosis – affects you, it might feel like there's a lot of information to take in. Perhaps there's a family history of the condition, or you may have never heard of it before – either way, it can feel overwhelming. This booklet is designed to help give you an introduction to ATTRv amyloidosis.





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What is ATTRv amyloidosis?

ATTRv amyloidosis (v for variant) is a condition where one of the proteins that is made by the body is not produced correctly. ATTRv amyloidosis is also commonly known as hereditary ATTR (hATTR) amyloidosis. The two terms are interchangeable.

The protein, which is called transthyretin (TTR), can become abnormal in ATTRv amyloidosis. In abnormal cases, it can break apart into smaller pieces of protein that bind together, forming clumps known as amyloid deposits.

These deposits can build up in different organs and tissues in the body, causing damage to them and creating health problems.

ATTRv amyloidosis is a hereditary condition, meaning it may affect multiple people in the family.



TTR is a naturally occurring protein made in the liver, which is coded for by the TTR gene.

In ATTRv amyloidosis, an inherited variant or mutation occurs in the TTR gene, which can result in an abnormal TTR protein being produced – this protein is less stable and can misfold or break apart.

These abnormal pieces of protein bind together and form amyloid deposits.

Amyloid deposits build up in various parts of the body, including the nerves, heart and digestive system, causing symptoms.

What does hereditary mean?

What is a hereditary condition?

A hereditary condition is one that is carried in our genes. ATTRv amyloidosis is a hereditary condition.

- **Every one of us has our own unique set of genes that we inherit from our parents.**
- **We get two copies of each gene – one from our mother and one from our father.**

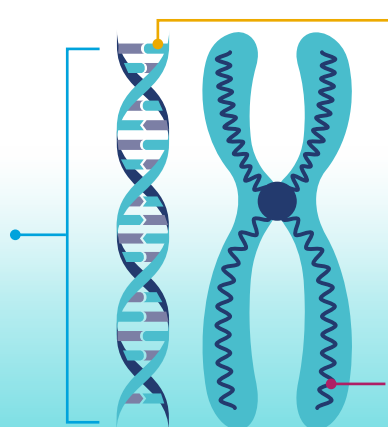
Genes are the instructions to make all the necessary proteins for humans to grow and live.

Every time a new protein is needed, the body reads these instructions and creates the protein.

But sometimes, these instructions have errors. These are called **mutations** or **variants**. When a mutation occurs in a gene, the associated protein may not function properly. In some cases, mutations can cause disease.

This is the case with ATTRv amyloidosis. People living with ATTRv amyloidosis will have inherited a mutated gene or variant from one of their parents, making it a hereditary condition.

DNA is present in nearly every cell in the body. DNA carries the instructions to help the body grow and function properly.



Genes are sections of DNA that are the instructions for particular proteins like TTR. A mutation in a gene can be passed on to future generations.

Chromosomes are long coils of DNA in our cells.



How does ATTRv amyloidosis affect my family?

Will everyone in my family have ATTRv amyloidosis?

No, not all relatives inherit the mutated gene, and not all people who have the gene mutation develop symptoms.

Why is this?

A person only needs to inherit a copy of the gene mutation from one parent in order to develop the disease risk. This is known as an **autosomal dominant inheritance** pattern.

When one parent carries the gene mutation responsible for ATTRv amyloidosis, each child has a 50% chance of inheriting the gene.

“ In my family there are sixteen nephews and grandchildren that could have the gene. In the world, it's called a rare disease. In our family, it's more like an epidemic.



DAVID
LIVING WITH ATTRv
AMYLOIDOSIS

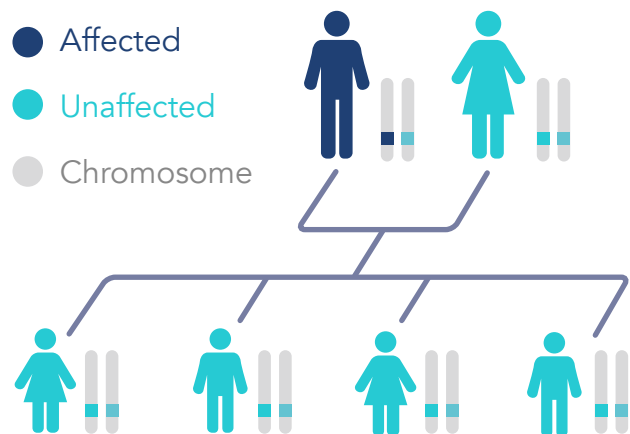


Examples of how ATTRv amyloidosis can occur within a family:

Tree 1:

1 affected parent, 1 unaffected parent, 0 affected children / 4 unaffected children.

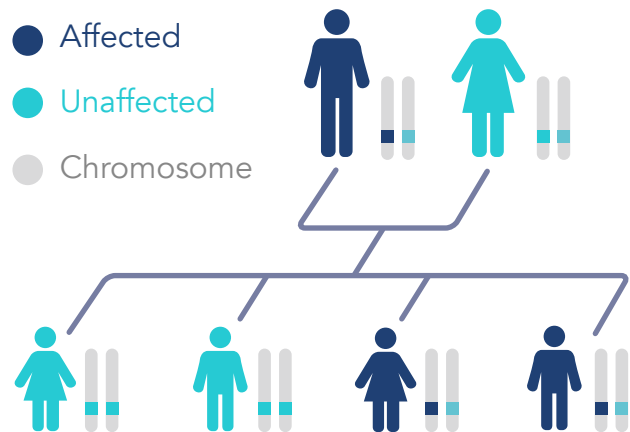
- In this scenario, none of the children inherited the mutated gene from their father



Tree 2:

1 affected parent, 1 unaffected parent, 2 affected children / 2 unaffected children.

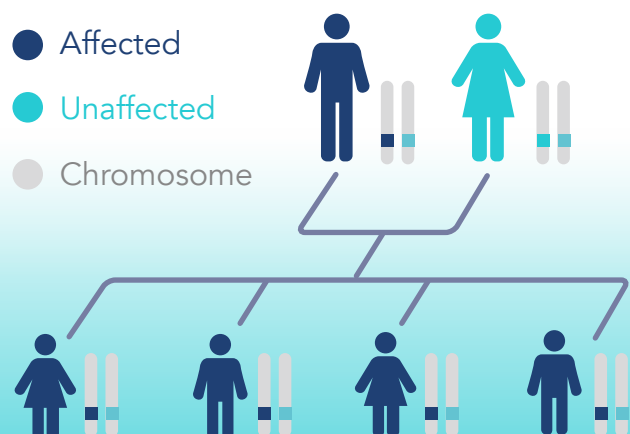
- In this scenario, two of the children inherited the mutated gene from their father



Tree 3:

1 affected parent, 1 unaffected parent, 4 affected children / 0 unaffected children.

- In this scenario, all of the children inherited the mutated gene from their father



Who can get ATTRv amyloidosis?

Does every family have the same risk of carrying the mutated gene?

ATTRv amyloidosis is a rare disease, but in some communities it is found more commonly than in others.

In some of these communities, the mutation that has caused the ATTRv amyloidosis is different. This is what is referred to as a **variant**.

There are over 150 variants of the TTR gene associated with ATTRv amyloidosis. Some of the more common variants are referred to as:

V50M

Also known as V30M, this mutation is the most common worldwide.

T80A

Also known as T60A, this mutation is thought to have originated in Ireland, and is most commonly seen in the UK and in people with Irish ancestry.

V142I

Also known as V122I, this mutation is seen in around 3-4% of African Americans, and is commonly seen in people of Afro-Caribbean and African descent.



“ My mother’s condition is a constant reminder of how this disease can affect my family. But I have faith in future research. I’m optimistic and I’m keen to inform others with the same condition and those that have setbacks due to culture, lack of knowledge or dysfunctional family histories.



SOPHIA
LIVING WITH ATTRv
AMYLOIDOSIS





What are the symptoms?

Everyone's experience of ATTRv amyloidosis can be different and people may have a mixture of various symptoms. On this page, you will find information about some of the key symptoms to know about and what to look out for.

Which parts of the body can ATTRv amyloidosis affect?

Symptoms can appear in various parts of the body and can sometimes seem unrelated. These symptoms tend to fit into one of three main categories, which primarily relate to the peripheral nerves, autonomic nerves and the heart.

Will my symptoms always be the same?

The symptoms of ATTRv amyloidosis may continue to get worse over time, so it's really important to discuss all of your symptoms with your healthcare team, even if you think they might not be related to this specific condition (e.g. erectile dysfunction). The more you tell them, the more they may be able to help.

Useful terms:

Neuropathy: disease that affects the nerves of the body.

Polyneuropathy: when more than one nerve system is affected.

Peripheral neuropathy: when the nerves responsible for movement are affected.

Autonomic neuropathy: when nerves controlling the internal organs are affected - this can lead to problems with digestion, sexual function and blood pressure.

Cardiomyopathy: disease that affects the heart muscles.

Peripheral nerve-related ('polyneuropathy')

- Tingling
- Numbness
- Carpal tunnel syndrome
- Burning pain
- Loss of sensitivity to temperature
- Weakness

Heart-related ('cardiomyopathy')

This is one of the most common signs of ATTRv amyloidosis; symptoms typically affect the heart:

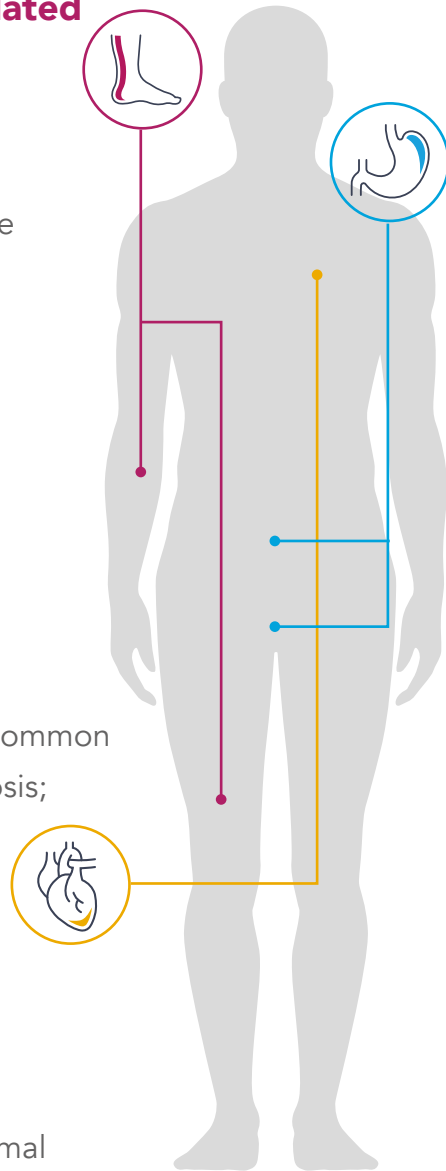
- Increased fatigue
- Dizziness
- Shortness of breath
- Leg swelling (oedema)
- Palpitations and abnormal heart rhythms (atrial fibrillation)
- Chest pain

Autonomic nerve-related ('autonomic dysfunction')

- Urinary tract infections
- Excessive sweating
- Dizziness upon standing
- Sexual dysfunction
- Nausea and vomiting
- Diarrhoea
- Severe constipation
- Unintentional weight loss

Other symptoms can include:

- Glaucoma
- Blurred or spotty vision
- Abnormalities of the pupil or blood vessels on the white of the eye
- Detached retina
- Progressive dementia
- Headache
- Loss of movement control
- Seizures
- Weakness
- Stroke-like episodes
- Kidney dysfunction



Getting a diagnosis

How do you test for ATTRv amyloidosis?

Healthcare professionals will use a combination of tests to diagnose ATTRv amyloidosis. These may include:

- **Genetic testing**

This test will determine if you carry a mutation in the TTR gene associated with ATTRv amyloidosis.

It involves taking a sample of blood and analysing it to see if the DNA inside the cells contain any mutations.

Genetic counsellors may be available to help you understand the issues related to genetic testing – including consequences of a positive result and what this might mean for your family. They will also be able to help you decide if the test is right for you.

- **Tissue biopsy**

This test allows your doctor to confirm the presence of amyloid deposits.

A small sample of tissue is removed from the body with a needle and examined in the lab. Most biopsies are painless and some use anaesthetic treatments to numb the area beforehand. After having a biopsy, you usually won't feel any pain.

- **Other tests**

Some tests can determine the impact of amyloid deposits on the heart, nerves and other organs.

These can include nerve tests, muscle tests and other types of scans like an echocardiogram (ECG) or magnetic resonance imaging (MRI).



Who am I likely to see at my medical consultations?

Your primary care physician will most likely refer you to one or more specialists - this might include a neurologist, a cardiologist, a gastroenterologist or an ophthalmologist. This is because ATTRv amyloidosis is a multi-system disease, meaning it can affect multiple organs that need to be checked by different people.

Why is it so important to get an early diagnosis?

Without treatment, the symptoms of ATTRv amyloidosis are likely to continue to progress over time, so catching and treating them early is important. Your doctor can only treat you for ATTRv amyloidosis once you have a diagnosis.

Once this happens, your doctor can find you the most appropriate treatment(s). These treatments might delay worsening of the disease, manage your symptoms and/or help you to maintain your daily activities.

“ We’ve been fortunate to have some healthcare professionals who made time for us. Who have listened deeply to us. Who have made us feel seen and known. Who have been willing to patiently explore options with us.



ALEXANDER
SON OF SAINT, WHO LIVED WITH
ATTRv AMYLOIDOSIS





Treatment for ATTRv amyloidosis

Is there a specific treatment for ATTRv amyloidosis?

Recently, considerable research into ATTRv amyloidosis has resulted in treatment advances that give people with the condition a more positive outlook.

Treatments are available that can stop amyloid deposits from forming, or stop the mutated gene from producing TTR so that the amyloid cannot develop.

What type of treatment(s) should I expect to take?

It is important to talk to your healthcare professional about potential treatments and the best plan for you.

They will be able to advise on the right course of action for your situation, which might mean treating the underlying cause and/or helping you manage symptoms that you may already be experiencing.

If your symptoms change, speak to your doctor about these changes so that they can review your current treatment plan. The earlier that treatment is started for symptoms, the better chance of success.

It is always a good idea to keep track of your symptoms so that you can speak to your healthcare team about them and if they have changed since your last appointment.

What should I do next?

It may feel like there is a lot to think about, so here are some things that could help when you're planning your next medical appointment:

- List all of your symptoms and include any new ones that you haven't covered with your doctor yet, no matter how trivial they may seem.
- Decide on the questions you might like to ask your doctor. Writing them down will help you remember. Some suggested questions are included on the next page.
- Think about the questions your doctor might be likely to ask you.
- Take a friend or family member along for support, to ask questions on your behalf or to take notes that you can refer to afterwards.
- If you are aware of a family history of the condition, consider talking to other affected family members to better understand their experiences.
- Think about widening your support network or connecting with other people with the condition.
- Review the information available via other resources to see if this prompts any other topics for discussion with your doctor.

“ Today's generations can get earlier diagnosis; they have more treatment options and I believe there is a promising future. ”

CATILENA
*LIVING WITH ATTRv
AMYLOIDOSIS*



FAQs

Here are some questions you may want to ask your doctor or healthcare professional:

My health

- Is there anything I can do to help maintain my health?
- How should I change/manage my diet or eating habits?

My condition

- Why do I have this condition?
- How might my condition change over time?
- Are my symptoms common for this condition?

My family

- How should I speak to my family members about my diagnosis?
- Could other family members be similarly affected?
- How was this condition passed on in my family?

Help and support

- Are there any support groups that I can contact?
- Is there any other help I can receive?

Prognosis

- How will this impact me in the long term?
- How might it affect my work or home life?
- How are my symptoms likely to change over time?

Treatment

- What treatments are available?
- What happens next?



Where can I go to get more support?

- **hATTR bridge**



- <https://www.hattrbridge.eu>
- The Bridge™ is a website developed and produced by Alnylam Pharmaceuticals; it is designed to help raise awareness of ATTRv amyloidosis and promote education on the condition for patients and their families.

- **Amyloidosis Alliance**



- <https://www.amyloidosisalliance.org>
- contact@amyloidosisalliance.org
- Amyloidosis Alliance is an international umbrella patient advocacy organisation, aiming to raise awareness and improve the quality of care of amyloidosis patients.

- **Amyloidosis Ireland**

Amyloidosis Ireland

- <https://amy.ie>
- info@amy.ie
- Amyloidosis Ireland offers support to patients affected by ATTRv amyloidosis and ATTRwt amyloidosis (wt for wildtype). They are committed to raising awareness to ensure people are diagnosed and have access to available treatments at the earliest opportunity.

- **Amyloidosis UK**



- <https://amyloidosisuk.org/>
- <https://amyloidosisuk.org/useful-resources/>
- Amyloidosis UK acts to provide extensive patient information and support to patients in the UK, and is formed by a community of people living in the UK affected by ATTR amyloidosis.



Other useful tools:

- **STAR: The Symptom Tracker app**

STAR: The Symptom Tracker app has been developed to support people living with ATTRv amyloidosis to track their symptoms.



- To learn more about STAR, visit <https://www.hattrbridge.eu/symptom-tracker-app>
- Available to download for free on Android or iPhone

- **ChATTR: The Family Dialogue Tool**

The Family Dialogue Tool supports having conversations with family members about the implications of a diagnosis, and provides them with the information they need about ATTRv amyloidosis.



- <http://www.familychattr.com/en>

STAR: The Symptom Tracker app does not pursue a medical purpose. It is designed to keep a record of users' symptoms, how they change over time and their impact on users' well-being and lifestyle. The app is not intended as a disease monitoring tool or as a symptoms checker. To have symptoms checked, users are advised to talk to their healthcare professional. Furthermore, STAR: The Symptom Tracker app does not make any medical diagnoses. Users are advised to seek the advice of a medical professional if they are concerned about their health.

The Family Dialogue Tool was developed and produced by the Amyloidosis Alliance in collaboration with Alnylam. Funded by Alnylam® Pharmaceuticals Switzerland GmbH. All rights reserved.

Notes



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